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DISEASES OF THE GALL-BLADDER*

BY

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It is a curious fact that although the gall-bladder is not essential to health it is very rarely absent in man. In those animals in which there is no gall-bladder, such as the horse, deer, pigeon, and rat, the sphincter of Oddi is often very well developed.

Double Gall-bladder

From the developmental standpoint one would expect a larger percentage of abnormalities, as the gall-bladder is developed as an outgrowth from the primary hepatic diverticulum; this outgrowth is sometimes bifid, giving rise to complete division into two, or the subdivision of the fundus. The first recorded case in which a double gall-bladder was removed at operation was that of Sherren, who in 1910 operated upon a woman aged 52, and removed the specimen (No. 561/31) which is now in the Royal College of Surgeons of England. Schachner, in 1914, operated upon a woman of 52 for cholecystitis, discovered a double gall-bladder, and drained both sacs. A case which came under my care in 1923 at King's College Hospital was that of a woman, aged 56, who had definite signs of chronic cholecystitis with gall-stones. At operation I removed a double gall-bladder, one sac containing stones and the other containing bile and mucus only (Fig. 1).

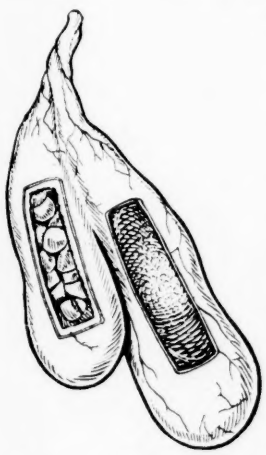

FIG. 1.—Drawing of double gall-bladder removed at operation. One sac contained gall-stones, but the other contained only bile.

With the advent of cholecystography and the submission of innumerable gall-bladders to *x*-ray examination each year, only a very few cases of double gall-bladders are discovered. In fact, Graham was not able to find a single example in 1,218 cases examined by cholecystography. However, Cave has reported two cases of double gall-bladder which were discovered by means of cholecystography, but confirmation by laparotomy was not forthcoming.

The gall-bladder during embryonic life is embedded in the substance of the liver, and occasionally this condition persists throughout life, and may cause the surgeon some trouble if cholecystitis should supervene. Although intrahepatic gall-bladders are found in such animals as the stoat, shark, ferret, pig, wart-hog, and many marsupials, they must be looked upon as very rare occurrences in adult human beings. During the second month of human foetal development the gall-bladder is quite buried in hepatic tissue, and at birth a small proportion of infants

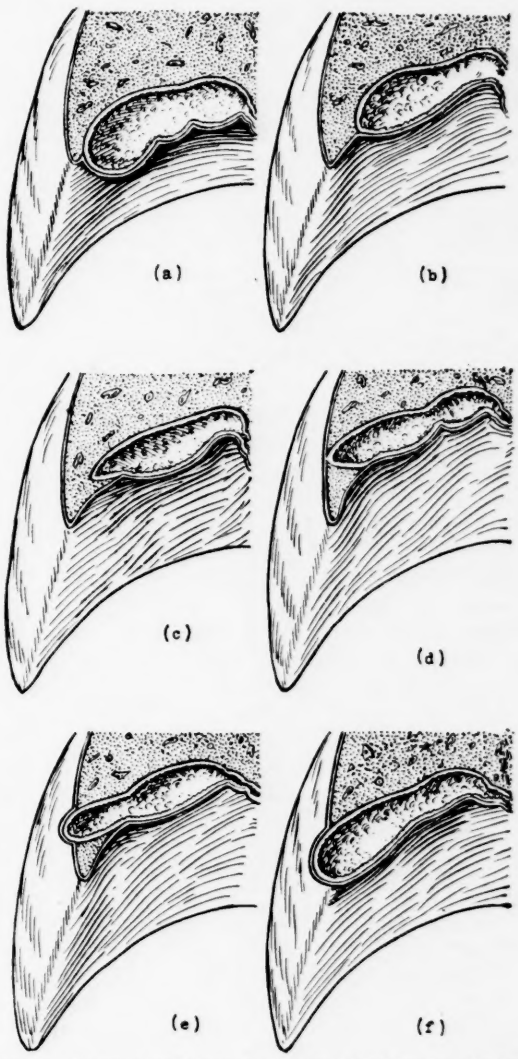

FIG. 2.—Various positions of the gall-bladder in relation to the under surface of the liver. (*a*) Normal position as seen in the infant. (b) to (e), Different types of intrahepatic gall-bladders. (f) Normal position as seen in adult life.

are found to have complete or partial intrahepatic gall-bladders. However, during the first six months of post-natal life the gall-bladder becomes more prominent and tends to leave the liver bed (Fig. 2).

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Torsion

Passing from an intrahepatic gall-bladder at one end of the scale we find a gall-bladder with a well-marked mesentery at the other, and this condition predisposes to torsion (Fig. 3). A well-formed mesentery is seen in 4 to 8 per cent. of gall-bladders, and yet only a very few of these are free, because the fundus of the gall-bladder becomes adherent to the omentum or the duodenum. Probably a partial rotation of the gall-bladder takes place in some of these cases, leading to congestion and even inflammation, so that adhesions are formed between the gall-bladder and neighbouring structures.

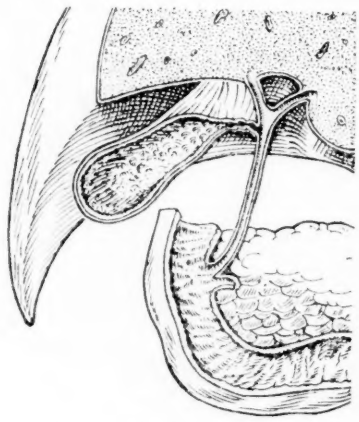

Fig. 3.—Diagram showing a freely mobile gall-bladder possessing a long mesentery. Such a case as this would be liable to torsion of the gall-bladder.

Another factor predisposing to torsion is a long cystic duct. The cystic duct is normally 1½ inches in length, but variations are common, and cases are on record in which the cystic duct was fully 3½ inches long. The presence, or absence, of gall-stones does not seem to have any definite bearing on the condition, as in some recorded cases stones have been found while in others they have been absent. In the case I described in the *Clinical Journal* in 1927 the gall-bladder contained six faceted stones.

Cases of torsion or volvulus of the gall-bladder are rarely diagosed, and cases are still reported in which the condition has been recognized only at necropsy. Ormos records a case in a woman, aged 71, who died with symptoms of haemorrhagic colitis. When the abdominal cavity was opened at the necropsy a very enlarged gall-bladder was found with a pedicle, which originated at the junction of its middle and lateral thirds; the gall-bladder was twisted round the pedicle and was necrotic. It is curious that torsion of the gall-bladder has been recorded in females only, and the majority of these have been aged.

There is often a history of previous pain in the abdomen, generally right-sided. A tumour is usually present. Unlike volvulus of the intestine which has gone on to gangrene, necessitating enterostomy, with a high mortality, torsion of the gall-bladder has no operative mortality, because usually the mobility of the gall-bladder renders the operation easy.

Traumatic Lesions

During recent years, with the ever-increasing motor traffic, transport has been responsible for the greater number of traumatic abdominal lesions.

Pure bile is sterile, but if any inflammation of the biliary passages has occurred, organisms will be present. If a considerable quantity of bile escapes suddenly into the peritoneal sac, acute peritonitis is certain to follow sooner or later, whether organisms are present or not; slight jaundice arises from absorption of bile by the peritoneum, and this may also be found in the urine. A more gradual escape of the secretion will probably lead to the formation of a localized intraperitoneal abscess or collection of fluid associated with jaundice, and possibly clay-coloured stools. In the case of a penetrating wound, bile and blood will escape on the surface, and septic peritonitis is almost sure to follow. Exploratory laparotomy should always be carried out in these cases when the initial shock has passed off. Removal of the gall-bladder, when damaged, is not difficult as a rule. However, damage to the liver or bile ducts may be a factor which mitigates against success.

Cholecystitis

Inflammation of the gall-bladder is responsible for the greater proportion of diseases of that organ. For convenience, inflammations of the gall-bladder may be divided into: (*a*) acute cholecystitis, and (*b*) chronic cholecystitis. In the main it may be said that cholecystitis is a chronic progressive disease, which begins with infection of the gall-bladder in early life, quite often gives rise to biliary colic in middle life, and if not treated by surgical means will cause serious complications in later life.

It cannot be stressed too forcibly that infection of the gall-bladder is frequently the precursor of such crippling conditions as chronic arthritis, toxic myocarditis, toxic nephritis, toxic hepatic cirrhosis, and even of toxic mental derangement. During the last ten years the Surgical Research Laboratory in Edinburgh, under the able direction of Professor D. P. D. Wilkie, has done much to elucidate the pathology of chronic cholecystitis, and to place this clinical condition on a sound scientific foundation.

ACUTE CHOLECYSTITIS

The question as to the best form of treatment in cases of acute cholecystitis still gives rise to controversy, and no consensus of opinion has been forthcoming in this country or among American or Continental surgeons. It is useless to postulate hard-and-fast rules governing the treatment of such an important surgical condition, as each case must be treated on its merits, but nevertheless there are certain facts which have become established and crystallized during the last ten years. Perforation of the gall-bladder calls for immediate operation, and it is the prodromal signs which precede perforation that are so important if we wish to lessen the mortality of this acute abdominal condition. Personal experience is always a help in coming to a conclusion as to the best form of treatment in surgical procedure.

During the last twenty years I have operated upon twenty-six cases of acute cholecystitis; in six of these the patient died—a mortality rate of 23.1 per cent. This is, to my mind, much too high a mortality rate, and I am convinced that acute cholecystitis calls for conservative surgery; in my cases some of the patients died because too much was done in the acute stage of the disease. A similar mortality rate is recorded for acute cholecystitis in some of the American clinics, and yet immediate operation is advocated. These cases require careful and constant supervision on the part of the surgeon, as immediate operation may be necessary at any period during the first three weeks of the illness. In general it may be said that when the patient is seen the first day of the illness, unless perforation is considered imminent, conservative measures may be adopted. During the first week a waiting policy may be pursued. If, however, the patient is not progressing, or the temperature remains elevated and the pain persists, or the gall-bladder increases in size, then operation should be performed. It is always advisable to remove the gall-bladder after an acute attack of cholecystitis, and a month after the disappearance of all symptoms is a useful time to allow.

CHRONIC CHOLECYSTITIS

If it is an accepted fact that chronic cholecystitis frequently begins early in life and causes toxic manifestations during middle and later life, then surely the rational form of treatment is removal of the gall-bladder. Yet how often one finds patients with chronic

disease of the gall-bladder being treated with hexamine, with the idea of disinfecting this diverticulum. In my opinion hexamine by the mouth is useless, and even huge doses given intravenously have had no effect, in my hands, in causing any disinfection of the gall-bladder.

The question of diagnosis is an important one, because it must not be thought that before chronic cholecystitis is diagnosed jaundice or colic must have been recorded. Nor are we to assume that the typical case is the "fair, fat, fertile, flatulent female of forty." There is a tendency to-day to belittle clinical history and clinical examination, and to allow the biochemist or the radiologist to make the diagnosis of gall-bladder disease. How often the patient is told that the gall-bladder is quite normal because the cholecystogram does not show any abnormality, or that there cannot be any stones in the gall-bladder because biliary drainage by means of a duodenal tube and the administration of magnesium sulphate does not reveal any cholesterin crystals or calcium bilirubin. It is wise always to consider the gall-bladder "suspect" in middle-aged persons who have some manifestations of chronic toxaemia, unless some other focus of infection is discovered.

Chronic appendicitis may be the forerunner of a similar disease in the gall-bladder, and the same type of organisms may be discovered in the wall of both these structures. Chronic cholecystitis is due to a blood-borne streptococcal infection which is situated in the wall of the gall-bladder, and plays a definite, yet very important, part as a focus of infection. To my mind the gall-bladder is still belittled and unconsidered, and is often passed over without comment when medical men are trying to discover the possible source of septic infection in these middle-aged patients.

The treatment of chronic cholecystitis is complete removal of the chronically infected gall-bladder—namely, cholecystectomy. As a disease chronic cholecystitis has been known from time immemorial, for gall-stones have been found in the most ancient of mummies. Medical treatment and diet can do a certain amount of good, but cannot cure the condition and cannot prevent complications from occurring. Perhaps the most satisfactory of the bile-salt preparations is dehydrocholic acid, which can be given to patients twice a day for a period before and after operation. It acts by causing a thinning of the bile, but has no action whatsoever on the evacuation of the bile in the gall-bladder.

Gall-stones may ulcerate into various viscera, such as the stomach, duodenum, colon, or pelvis of the kidney. The commonest by far is ulceration into the duodenum, owing to its anatomical proximity. However, the duodenum is the widest part of the small intestine, and impaction and obstruction do not occur in it. It is in the narrowest part of the small bowel, the distal ileum, that acute obstruction arises. Acute intestinal obstructions due to gall-stones are not common, but they are well known and are found in aged patients, the majority of patients being over 70 years of age. The gall-stones illustrated in Fig. 5 were removed from the ileum of an elderly patient who was admitted to hospital with acute intestinal obstruction which was thought to be due to a growth of the colon.

There can be no doubt that cholecystography can be of great value in the diagnosis of organic disease of the gall-bladder, but it only tells us that the gall-bladder does or does not concentrate well in general terms. Probably, in the future, when better technique both in the administration by mouth or intravenous injection of a suitable dose of sodium tetra-iodophenolphthalein has been attained, we may obtain results which are far more valuable to the clinician in the interpretation of gall-bladder disease.

Gall-stones contain a certain amount of calcium salts, and although this is usually a low percentage, it accounts for the fact that radiographic examination gives positive results in some cases. It is a wise procedure to take a skiagram of the gall-bladder area prior to undertaking cholecystography, since, in quite a number of cases, gall-stones will be demonstrated and the latter investigation will not be necessary.

A barium meal may give the practitioner considerable help in cases of vague dyspepsia in which the clinical history and examination reveal nothing. In some cases the duodenal cap is indented by an enlarged and adherent gall-bladder (Fig. 4).

Fig. 4.—Barium meal showing the deformed duodenal cap due to pressure of an enlarged adherent gall-bladder.

There is bound to be a small proportion of cases in which the gall-bladder is "suspect," and yet there is no definite evidence to go upon. It may be that all sources of infection have been eliminated in chronic rheumatoid manifestations, and yet the patients are no better; in such cases it is justifiable to explore the gall-bladder. In several cases of chronic rheumatoid arthritis in which I have performed cholecystectomy the results have been most gratifying.

The so-called "strawberry gall-bladder" is not a disease in itself, but is a condition in which the epithelium and stroma of the gall-bladder have become infiltrated with lipoids and cholesterol, and in the stroma large foamy cells of quite characteristic appearance occur. The condition is associated with cholecystitis, and gall-stones are quite often present. It is interesting to note that the strawberry gall-bladder, or, as it is sometimes called, "cholesterosis," can be produced experimentally in rabbits by feeding the animals on cholesterol and injecting streptococci into the gall-bladder wall. There seems very little doubt that this condition, to which so much attention has been given of late, is in reality the aftermath of chronic infection of the gall-bladder.

The operation of cholecystectomy for chronic cholecystitis must not be looked upon as a serious one provided adequate pre-operative and post-operative treat-

ment is carried out. Modern operative technique only gives a low mortality, and in 467 cases which have come under my supervision during the twenty-year period 1915–1935, I have lost twenty-six, a mortality of 5.5 per cent. This corresponds almost exactly with some American statistics, for Fowler of Brooklyn has reported a mortality of 5.9 per cent. in 1,206 cases, while Erdmann of New York reports a record of 525 operations with a mortality of fifteen cases, equalling 2.85 per cent. Thus this operation, which had a high mortality thirty years ago, may be said to have an extremely low one at the present time.

Analysis of 505 Cases of Cholecystectomy, 1915–35

Total Mortality: 7.3 per cent.

Diagnosis	Number of Cases	Sex	Deaths	Percentage	Total
Acute cholecystitis ...	26	Females 21 Males 5	5 1	23.8 20.0	23 %
Chronic cholecystitis ...	467	Females, 386 Males 81	21 5	5.4 6.2	5.5 %
Malignant cholecystitis	10	Females, 8 Males 2	4 1	50.0 50.0	50.0 %
Torsion of gall-bladder...	1	Female	0	Nil	Nil
Double gall-bladder ...	1	Female	0	Nil	Nil

Malignant Disease of the Gall-bladder

Carcinoma of the gall-bladder is in itself a rare disease, but it would be excessively rare if patients with chronic cholecystitis were more often submitted to operation, for fully 95 per cent. of cases of malignant disease of the gall-bladder are produced by calculi. Ten cases of malignant disease of the gall-bladder have come under my care, and in all these calculi were present. Most of these were operated upon under the mistaken diagnosis of chronic cholecystitis with gall-stones, and it is a curious fact that the operation is usually quite easy, and there is no suspicion of malignant disease until the gall-bladder is opened and submitted to histological examination. We shall only come to know the true incidence of carcinoma of the gall-bladder when every operation specimen is submitted to full histological examination.

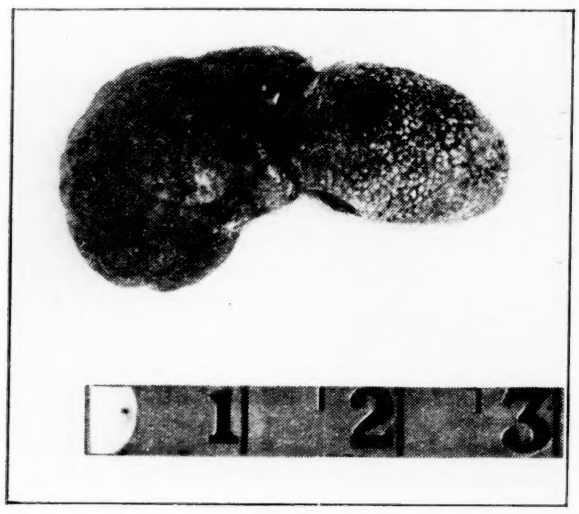

Fig. 5.—Gall-stones which had ulcerated through the gall-bladder wall into the duodenum and become impacted in the lower ileum.

Diseases of the gall-bladder, which in the main are due to infection, are quite common, and can only be cured by surgical measures. Radical operation gives a low mortality rate and results in a cure of the condition in most cases; it prevents innumerable complications and sequelae in later life, not to mention malignant disease.

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SOME IMMUNOLOGICAL ASPECTS OF THE CURE AND PREVENTION OF DIPHTHERIA*

BY

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BACTERIOLOGIST TO THE COUNTY OF STAFFORD

From the clinical point of view this subject can be limited to the consideration of passive and active immunization and the immunological accidents attending these procedures. In passive immunization ready-made antitoxin is introduced into the patient's circulation. In active immunization the patient manufactures his own antitoxin as the result of natural or arranged antigenic stimuli. Passive immunization is of short duration, and is used for treatment. Active immunization stimulates a tissue habit which lasts for years, and is the ideal prophylactic.

The theme of this address centres round a patient who died of acute anaphylaxis nearly a quarter of a century ago. A boy, aged 9 years, suffering from scarlet fever, was admitted to an institution. As cross-infection was prevalent he was given on admission 500 units of diphtheria antitoxin intramuscularly. The acute course of the scarlet fever was uneventful. Three weeks later he was allowed up and was transferred to a convalescent ward. A week later he developed acute faucial diphtheria. He was then ordered 2,000 units of diphtheria antitoxin. Immediately after the injection he showed symptoms of acute respiratory distress and collapsed and died in fifteen minutes.

Active and Passive Immunization

The prophylactic use of antitoxin was more prevalent then than now. Many years previously attention had been drawn to the temporary nature of passive immunization. Globulin solution remains slightly longer in the blood than unconcentrated serum, but it is doubtful if any form of antitoxin is retained in sufficient quantity to prevent infection three weeks after administration. Its use for this purpose merely gives a false sense of security; sensitizes the patient and increases the risk of unpleasant reactions if he should afterwards need serum treatment; may lead to a higher carrier rate; and may delay the development of natural active immunity. Some people recommend during an epidemic an initial dose of 1,000 units of antitoxin followed by active immunization fourteen days later, but there are scientific objections to this procedure. As one antigen now available can produce a good response in fourteen days it is better to segregate and actively immunize the susceptibles at once if their swabs are negative. Those showing positive swabs may be virulent carriers—if so, they are already immune; or they may be incubating the disease—if so, clinical signs will soon appear and antitoxin can then be injected. The old objections to active immunization during an epidemic do not hold if toxoid preparations are used. A small number may develop the disease before protection is established, and parents should be warned of this possibility.

* Read before the North Staffordshire Medical Society, June 6th, 1935.

Dosage of Antitoxin

You will notice that the patient quoted received 2,000 units of antitoxin when he developed diphtheria. Unfortunately these small doses are still often given for economic reasons. The size of the dose to some extent depends on the day of disease and the severity of the case. Toxin is rapidly fixed by the tissues and cannot then be easily dissociated. It is important to administer antitoxin at once in every case of suspected diphtheria without waiting for removal to hospital or for bacteriological diagnosis. A small proportion of diphtheria patients may have an initial negative swab, and in some instances a report may not be available for forty-eight hours. If the infection turns out to be due to yeasts, streptococci, pneumococci, or Vincent's organisms, the protein associated with the antitoxin often produces beneficial effects. Mildness of symptoms does not justify waiting or the administration of a very small dose of antitoxin, for a patient with slight initial symptoms may become gravely ill later.

The minimum dose for a child should be 8,000 units, and 100,000 units or more should be administered in severe cases. These large doses can now be concentrated in very small bulk. Concentration is based on the fact that in the horse antitoxin is associated with the pseudoglobulin fraction of the serum, which can be isolated from the troublesome euglobulin by salting out or by electrodialysis. These methods have reduced the volume of 10,000 units from 50 c.cm. to 4 c.cm. or less. As well as the fatalities which result from under-treatment, an increase in the incidence of paralysis is a notable feature, and it is a truism of antitoxin treatment that it is easier to give too little than it is to give enough.

Some contend that antitoxin is useless after the fifth day of disease, but patients seen for the first time after this day ought to have it if toxin is still being elaborated. In mild and moderate cases it is injected intramuscularly. In severe cases the intravenous route is used, but the patient should be desensitized if he has previously received antitoxin manufactured by the same species of animal. The serum should be warmed before intravenous administration. Some authorities recommend intraspinal injections in special cases, but although increased protein and a leucocytosis have sometimes been found in the cerebrospinal fluid of patients suffering from diphtheritic paralysis, the administration of antitoxin in this way is not necessary if it is given early by the usual routes. It has been stated that antitoxin has little or no effect in "gravis" infections, but this seems to be merely a local strain peculiarity, as some "gravis" epidemics respond well to the ordinary antitoxin at present on the market.

It is useless taken by the mouth or per rectum, and absorption is very slow by the subcutaneous route. By intraperitoneal inoculation antitoxin does not reach its maximum in the blood until thirty hours after administration. In this country it is the custom to give the total antitoxin in one dose. Stocks should be stored in a dark, cool place, but should not be frozen, as this leads to rapid deterioration. Sound antitoxin treatment implies three maxims: (1) give it early; (2) give sufficient; (3) give the total amount in one dose by a route through which it will be easily absorbed. Simple injunctions, far removed from counsels of perfection, but often ignored by some of us.

Anaphylaxis and Serum Sickness

The use of concentrated antitoxin has reduced the ill-effects which follow serum injections, but they are still sufficiently common to require mention. These can be discussed under the headings of anaphylaxis and serum sickness.

Anaphylaxis may be here confined to the unpleasant symptoms which follow repeated injections of protein substances in subtoxic or non-toxic amounts, a suitable interval elapsing between the first or sensitizing dose and the second or assaulting dose. The minimum incubation period is usually from seven to ten days before the patient becomes sensitized from the first injection. The period of maximum sensitization, although usually from three to six weeks, varies with the size of the dose and other factors. The larger doses prolong the incubation period.

All sensitizing or assaulting substances are antigens—that is, they must be capable of producing antibodies or they must be the portions of antigens known as haptenes, which are capable of combining with antibodies. The anaphylactic reaction appears to be the result of antigen–antibody combination, which has selective effects on the cells of unstriped muscle and on the capillary endothelium. The effects depend to some extent on the anatomical distribution of plain muscle, as is well shown by the diversity of the findings in different species of animals. In the guinea-pig the predominant symptom is bronchospasm; in the dog, liver derangement owing to spasm of the muscular coat of the hepatic veins; and in the rabbit, respiratory arrest due to spasm of the pulmonary vessels. Human anaphylaxis resembles that in the guinea-pig, and patients often complain of a peculiar sensation of constriction in the chest after administration of the second dose of serum. This symptom also occurs as an allergic phenomenon. In anaphylactic shock the blood changes common to all species are: diminished coagulability; increased concentration of protein and red cells; pronounced leucopenia; and reduction of complement.

Opinions differ as to how anaphylaxis is produced. The humoral theory is obsolete. The reaction is too explosive to be explained by ferment action. Dale[1] (1912) has suggested that the antigen–antibody union upsets the colloidal state of the cells, leading to intracellular precipitation. Doerr[2] (1922) thought that the union and precipitation occurred on the surface of the cells. Lewis[3] (1927) has shown the importance of histamine in producing the capillary reaction of skin irritation. He believes that histamine, or a complex of similar activity, is present in normal body cells, and it is not difficult to imagine its liberation as the result of injury caused by antigen–antibody union. This conception of anaphylaxis brings it into line with shock resulting from grave destruction of tissue, such as that taking place in extensive burns, in which, if the theory is correct, there must be an extensive liberation of histamine. There is a remarkable similarity between histamine shock and the anaphylactic reaction, and this likeness extends to the peculiarities dependent on species. Animals resistant to anaphylaxis are also resistant to histamine shock. It is difficult to sensitize the white rat, which is 1,000 times more resistant to histamine than is the guinea-pig.

Acute anaphylactic shock ensues within a few minutes of the injection, and death may occur in from eight to fifteen minutes, but sometimes the symptoms may be more prolonged. Fatal anaphylaxis is rare in man, and most of the serious accidents follow the administration of antitoxin intravenously. Richet estimates the incidence at 1 in 300,000. During the war sixty cases of shock were reported in the British Army, but since eleven of these followed a first prophylactic injection of serum they cannot be classed as true anaphylaxis. Forty-nine cases of shock with twelve deaths were reported as resulting from antitoxin treatment of tetanus, but intravenous injection accounted for the majority of these accidents (Rouse, 1921). In England alone at least two million antitoxin injections were given during the war.

Prevention of Anaphylaxis

The fear of anaphylaxis must therefore not curtail treatment. With intramuscular administration the risk is infinitesimal. With intravenous injection the risk is slightly greater, and the patient should be desensitized. The following methods are available:

1. The intradermal or subcutaneous injection of minute doses, or the continuous or intermittent administration of very dilute antigen. It is best to begin with 0.01 c.cm. of serum, increasing the dose every half-hour so that a 1 c.cm. dose is given at the end of four hours. The full amount required for treatment can then be given three hours later.

2. Horse serum diluted 1 in 10 with distilled water and heated to 80° C. desensitizes without risk of shock, the initial dose being 1 c.cm.

3. The various narcotics. They are, however, dangerous in diphtheria.

4. Atropine 1/200 to 1/100 grain, and adrenaline 5 to 15 minims of 1 in 1,000 solution subcutaneously, and the intravenous injection of sodium chloride, may also be employed.

5. Non-specific desensitization. Sensitive guinea-pigs can be protected against shock by the prior injection of normal guinea-pig serum, so in man the previous injection of normal human serum may have similar effects.

Serum sickness may be revealed by:

1. Acute fatal shock, which is rare. This is characterized by fainting, dyspnoea, collapse, and sometimes by vomiting, diarrhoea, and cough. Oedema of the face, throat, and lungs may also be present. It follows serum administration immediately.

2. The more common and less serious form manifested by (*a*) scarlatiniform, morbilliform, and urticarial skin eruptions; (*b*) associated fever; (*c*) swelling of the joints; (*d*) enlargement of glands; (*e*) albuminuria; (*f*) sometimes hypocholesterolaemia. This milder form comes on six to fourteen days after the administration of serum, and may recur after intervals of two to five days, sometimes showing two or three recurrences. Recovery is the rule.

Occasionally the period of onset of the two forms is reversed. The acute attack occurs in about 1 in 100,000 cases. The exanthematous variety effects 20 to 90 per cent. of those who have had a single injection of serum. The incidence of serum sickness is commoner in patients who have received serum previously, and then the incubation period of the exanthematous form is reduced to four days or less. The immediate shock is probably due to idiosyncrasy, but the delayed symptoms may be regarded as a variety of anaphylaxis. The severity of serum sickness has been reduced by the use of concentrated serum, but it is still fairly common. The administration of soluble calcium salts also lessens the tendency to it.

Natural Immunity

A proportion of human beings acquire active immunity as the result of natural infection. Such people give a negative Schick reaction when the antitoxin in the blood is in the region of 1/30 of a unit per cubic centimetre. The Schick toxin dose used in the test is usually 1/50 M.L.D. Some authorities, however, suggest that smaller amounts of antitoxin in the blood will lead to a negative Schick reaction, and it is difficult to be dogmatic on the point owing to the many variables involved, not the least of which is the variation in combining power of different toxins.

Gröer and Kassowitz[4] worked out the percentage of humans of different ages who showed antitoxin in the blood. At birth it was present in detectable amounts in 84 per cent. of infants. There was a rapid fall to 32 per cent. at 9 to 18 months, and the lowest figure (28 per cent.) was reached at 2½ to 3½ years. Thereafter there was a gradual rise, which reached the maximum at 17 to 18 years. The antitoxin present in the blood at birth is due to passive immunization, being transmitted through the placental circulation. Later the child receives it through the mother's milk, and breast-fed infants have a higher blood antitoxin than bottle-fed children. This fact does not contradict the statement that antitoxin by mouth is of no use for older children, as the physiological conditions and other circumstances are different. The Schick test is no criterion to immunity in newly born infants, as the skin does not react allergically until later, and this explains the apparent inconsistency of Schick-positive mothers giving birth to Schick-negative children. The danger period for infection lies between the first and fifth years. At or after the fifth year active immunization due to subliminal infection begins to make itself felt, and the ratio of immunes to susceptibles increases, and this is why it is customary to immunize all children under 5 years of age without a preliminary Schick test.

The degree of natural immunity depends on the extent of contact with *C. diphtheriae*, and this in turn varies with age, density of population, contact with known cases, and increase in the immunity rate. Increase in the immunity rate may mean increase of virulent carriers, who may then mix freely with the susceptibles without being detected, and may either immunize or give them the disease. Enlarged tonsils and adenoids impede natural immunization.

Principles of Artificial Immunization

Larval diphtheria plays a part in the spread of infection and of immunization. It is a mild infection without toxic symptoms, and may pass unnoticed. Nasal infection often assumes this form.

Early workers tried to induce artificial immunity with ordinary toxin, but it proved too potent to be injected into human beings in sufficient amount to be of value. When Theobald Smith[5] in 1907 demonstrated that the addition of antitoxin did not inhibit the antigenic powers of toxin the way became clearer. Von Behring[6] (1913), and Park[7] in the same year, introduced toxin-antitoxin mixtures. In 1923 Schroder and Park[8] introduced a new mixture containing a reduced amount of toxin. It has since been found that modified toxin or toxoid has antigenic powers. Toxoid is toxin minus the toxic properties. Such toxoid appears spontaneously in toxin kept under suitable conditions. It can be prepared by the addition of formaldehyde to toxin. Ramon[9] (1923) applied the term "anatoxine" to formolized toxin, but as this substance is no different from toxoid this term is not in favour in this country. Sodium ricinoleate has been employed for detoxication, but it merely masks the toxic effects, which may become evident on dilution.

When toxin or toxoid and antitoxin are mixed in equivalent proportions a precipitate is formed which is comparatively free from deleterious proteins. These floccules contain only 1/50 of the nitrogenous material present in the original mixture, and are very useful for immunization. Ramon[10] (1926) has demonstrated that irritating substances, such as tapioca, increase the antigenic activity of anatoxine. Glenny, Pope, Waddington, and Wallace[11] (1926), and Glenny and Waddington[12] (1928), have proved that the addition of potassium alum to toxoid has similar effects. Toxin-antitoxin mixture is not now used in England, as it is rather risky, owing to the occurrence of dissociation of the toxin. Toxin-antitoxin floccules are not in favour, as this mixture is not neutral to animals at the point where specific flocculation first takes place. The discarding of these toxin preparations has eliminated those fatal and serious accidents which still arise on the Continent.

Methods of Immunization

Artificial active immunization can best be induced in the following ways:

1. Toxoid-antitoxin: in some preparations goat's serum is the vehicle for the antitoxin, so that patients are not unnecessarily sensitized against future injections of horse serum, although there is no definite evidence that sensitization can occur with such small doses. Toxoid-antitoxin mixture is especially recommended for younger children when it is not convenient to do preliminary testing and when reactions must be avoided at all costs.

2. Formol-toxoid is recommended for routine use in children where the Schick and Moloney tests can be carried out, for it may cause severe reactions in Moloney-positive children, especially those over 8 years old. This liability increases with age, so that it is not a suitable preparation for adults unless they give a definite negative Moloney reaction. Formol-toxoid should not contain less than 20 to 35 Lf.

3. Toxoid-antitoxin floccules are the method of choice for adults such as doctors and nurses, etc.

(These three preparations are given in three doses of 1 c.cm., usually at weekly intervals, but much better results are obtained by extending the interval to two or three weeks, especially that between the first and second doses. When reactions are likely with formol-toxoid some authorities recommend the initial injection of 0.1 c.cm. forty-eight hours before the first immunizing dose. In contrast to passive immunization, the subcutaneous route is used, as slow absorption and excretion are desirable.)

4. Alum-precipitated toxoid is the latest addition to the list. Its high immunizing value was discovered in the Wellcome Research Laboratories in 1926. One injection of 1/2 to 1 c.cm. of alum-precipitated toxoid immunizes well, in contrast to the three doses which are needed of the other preparations. It may cause severe local reactions in the form of induration or abscesses, and these are most apt to appear in children over 2 years of age and in adults. Attempts to eliminate these reactions reduce its immunizing efficiency, but at the present time investigations are being carried out to see how far the unpleasant manifestations can be reduced without seriously impairing the efficiency of the product. A reduction of the dose has been suggested as a way out, for it has been found that two small injections of 0.1 c.cm. each give a higher and more rapid immunity than one dose of 1 c.cm. This preparation can sometimes actively immunize in fourteen days, and may prove useful when it is desired to raise the threshold of protection quickly, as in epidemics. It must, however, be emphasized that one-shot immunization with alum-precipitated toxoid must not be used for older children or adults when they are Moloney-positive. In these cases, as already indicated, T.A.F. is the preparation of choice. Some authorities suggest that pronounced Moloney-positives may be left alone, as even though Schick-positive they have some immunity against diphtheria.

In carrying out active immunization care must be taken to exclude the introduction of pathogenic micro-organisms, and the needles and syringes should be thoroughly sterilized. Serious local and general reactions may result from neglect of this precaution, and a valuable preventive measure may thus be undeservedly discredited. On an average 95 per cent. of artificially immunized children are still negative when Schick-tested three to five years later. The figures vary with the preparation used. The order of antigenic efficiency is: (1) alum-precipitated toxoid; (2) formol-toxoid; (3) toxoid-antitoxin floccules; (4) toxoid-antitoxin mixture.

Variations arise with the same preparation in different districts both in the incidence of infection after immunization and in the percentage of resulting immunes as confirmed by the Schick test. Allowing for differences in technique and errors in diagnosis there are times when other explanations must be sought for these discrepancies. Differences in local strains may be responsible. Some think that "gravis" and "intermediate" infections are more likely to break through the immune barrier than "mitis," but in Staffordshire I have recently examined swabs from five children who developed diphtheria after previous immunization, and in all these instances typical "mitis" was recovered. No doubt differences in immunological reactions of different individuals play a part. It is known that some adults are entirely refractory to immunization, and it is a peculiar fact that although some of these remain Schick-positive all their lives they never contract the disease. Their protection seems to be independent of antitoxin, and it has been suggested that it is hereditary.

The immunology of diphtheria is a vast subject, and it is only possible to touch the fringe of it. The modern progress made in the treatment and prevention of this disease stands to the credit of those great laboratory workers whose researches from 1880 onwards have extricated our conceptions from the realms of empiricism. They deserve at least the passing tribute of a thought.

My thanks are due to Dr. R. A. O'Brien of the Wellcome Research Laboratories; to Dr. W. D. Carruthers, county medical officer for Staffordshire; to Dr. J. T. Macnab, medical officer of health, borough of Stafford; and to Dr. T. V. Cooper, for their kind help and criticism.

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G. Loewy (*Bull. et Mém. Soc. Nat. de Chir.*, June 8th, 1935, p. 739) reports a case of cancer of the oesophagus, in which, after gastrostomy, normal feeding was resumed by mouth following dilatation of the oesophagus. The patient, a man of 57 years, had suffered from progressive dysphagia for some time, and was losing weight rapidly. Radiography and oesophagoscopy showed that the oesophagus was obstructed by a tumour, which biopsy proved to be a squamous epithelioma. A gastrostomy was carried out, and ten months later the patient was readmitted to hospital for radium treatment and dilatation. The latter was a difficult procedure, but after the first dilatation the patient was able to swallow fluids, and after the second the passage was 9 mm. in diameter and allowed the swallowing of purées. Immediately after the normal feeding by mouth had become possible the patient gained rapidly in weight. After fourteen dilatations he was able to eat any form of food, and his mental outlook had completely changed. It would appear that mastication and deglutition are necessary for the functioning of the digestive tract and for the requisite nutrition. Another point of interest in this case was the slow development of the lesion. The danger of dilatation by fissure or rupture does not appear to be great, as in 137 dilatations there have only been two fatalities, and in another series of cases from the Mayo Clinic there were only nine deaths out of 794 patients treated by dilatation for cancer of the oesophagus.

SIGNIFICANCE OF PYREXIA IN CHRONIC PULMONARY TUBERCULOSIS

BY

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Until quite recently it was held that a patient could not suffer from active pulmonary tuberculosis without his temperature chart showing some abnormality. There was no method by which the physician could obtain accurate information on the progress of the disease in the chest. Physical signs were notoriously unreliable, and one laboratory test after another had to be discarded as useless for this purpose. *X*-ray technique had, as yet, not improved sufficiently to demonstrate the value of serial films. Therefore the control of the treatment was based on the only instrument of precision available to the physician—the thermometer ; and it was assumed that pyrexia was the index of the activity of the disease. Changes in body weight and objective and subjective symptoms were also used as guides, but the temperature chart was given pride of place. The patient was kept in bed or at rest until his temperature had been normal for some time, and then exercise was gradually attempted.

The Temperature Chart

Various elaborate methods of temperature-taking were therefore evolved, in order that the most accurate observations should be recorded and that even the slightest variations in the daily swing should not be missed. The temperature taken in the axilla was quite rightly discarded as not being sufficiently accurate, and even oral temperatures were rejected by many clinicians for the same reason. The method of taking the temperature in the rectum thus came into common use in the treatment of pulmonary tuberculosis. Patients were impressed by this ; it became a solemn rite.

The advent of *x*-ray, and especially the serial *x*-ray, examination in the study of the disease has fundamentally altered our ideas of the relation between the activity of the disease (as evidenced by the spread) and the patient's temperature. It has become apparent that not only can the disease be active and spread without any disturbance of the temperature curve, but also, conversely, that the patient can be febrile over comparatively long periods without any evidence that the disease in the lung is spreading. Nowadays, the serial *x*-ray examination is undoubtedly the most accurate single method of determining the progress or retrogression of the disease. The temperature chart, although still of great importance, has been relegated to a subsidiary position, and it has been found that in conjunction with *x*-ray control it is quite sufficient for all practical purposes for the temperature to be taken in the mouth for five minutes morning and evening. This is to be preferred to the rectal method, which is apt to overemphasize every slight variation, especially when it is remembered that more information can be obtained from consideration of the general course of the chart than by attaching importance to the actual readings.

The purpose of this article is to show that although the temperature chart has been relegated to a position of lower importance than formerly, in the treatment of the disease, owing to the fact that it often fails us as a guide to the activity of the disease, yet its readings are still of the utmost significance, and give us much valuable and definite information, especially when correlated with serial *x*-ray photographs.

Wingfield's Classification

In 1932, at the Brompton Hospital Sanatorium, Frimley, we adopted the classification suggested by R. C. Wingfield in his article[1] "Chronic Pulmonary Tuberculosis—A New Conception." It became the routine practice to take serial *x*-ray films of the majority of the patients at monthly intervals. The information derived from these films was correlated with that from the temperature charts and the clinical course of the disease. It was soon observed that, within limits, the various types of lesions, as defined by the new classification, were associated with definite and characteristic variations in the temperature chart.

A full description of the lung lesions to which reference is made may be found in the original article. Briefly, they are:

1. The secondary lesion.—This is a local allergic tissue reaction due to a deposit of bacilli, probably haematogenous. This reaction may disappear rapidly or progress to:

2. The intermediate lesion.—This corresponds roughly to what is known as active fibro-caseous disease.

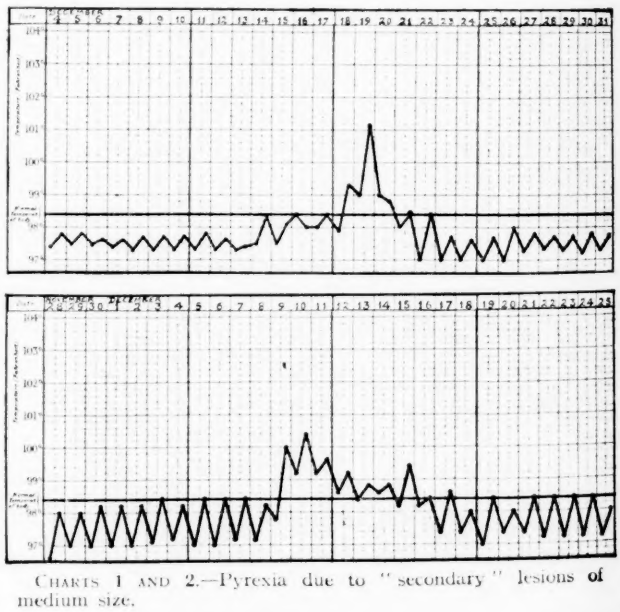
3. The tertiary lesion.—This is the intermediate lesion healed as far as possible and non-progressive. Intermediate and tertiary lesions may become secondarily infected by bacteria from the respiratory tract.

THE SECONDARY LESION

The disturbance of the temperature chart due to the appearance of a "secondary" lesion is typical, but varies in degree according to the size of the new lesion. The size of this lesion is dependent on (1) the number of tubercle bacilli deposited in the lung ; and (2) the allergic state of the lung tissue of the patient. For descriptive purposes this type of lesion may be considered under three headings, according to the area of the lung tissue involved.

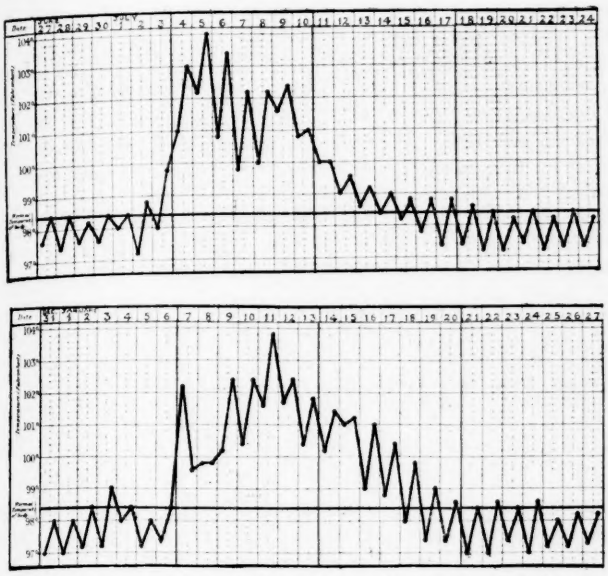
1. The small "secondary," involving an area about the size of a two-shilling piece, may produce no rise of temperature and, indeed, no symptoms whatever. The lesion may disappear entirely as revealed by *x*-ray examination, or leave a definite "intermediate" lesion, without having given any clinical indication of its presence.

2. The medium-sized "secondary," involving a larger area, results in a typical disturbance of temperature, which is very like that of a mild attack of influenza. There may or may not be a slight rise of temperature for a day or two beforehand, and then the chart shows a pyrexia of 100° to 101° F. for a day or two. This gradually settles to normal in a few days, and may remain so for some weeks or even months. It is probably for this reason that so many patients suffering from pulmonary tuberculosis give a history of an attack of influenza as the starting-point of their disease.



CHARTS 1 AND 2.—Pyrexia due to "secondary" lesions of medium size.

3. The large "secondary," perhaps even involving the whole of a lobe, has an onset similar to the above, but more marked. The temperature rises higher, and for a few days the chart may resemble that of an attack of lobar pneumonia. The temperature, however, does not settle by crisis, but returns to normal gradually by lysis, generally within fourteen days from the onset. The absence of the crisis and the presence of tubercle bacilli in the sputum lead to a correct diagnosis.



CHARTS 3 AND 4.—Pyrexia due to large "secondary" lesions.

THE INTERMEDIATE LESION

It was observed with great astonishment that as a general rule an "intermediate" lesion which is spreading, as disclosed by *x*-ray examination, and therefore active, gives no indication of this activity on the temperature chart for at any rate the first few weeks—that is, until it is well entrenched. Many examples of this type of lesion were studied by frequent serial *x*-ray films from the time they appeared as the faintest shadow until there was obvious, dense, spreading disease. Very frequently during the whole of this period not only was there complete absence of pyrexia, but the patient appeared, both subjectively and objectively, to be in good health. It would appear that it is not until this type of lesion erodes a patent bronchus, thus infecting itself with the bacteria of the respiratory tract, that fever and the symptoms commonly associated with chronic pulmonary tuberculosis appear. It has thus been realized that a normal temperature chart cannot be trusted as evidence of non-activity of the disease, and it cannot be too strongly emphasized that absence of fever does not always mean absence of activity or spread. The only assurance of non-activity is the existence of a series of comparable *x*-ray films, showing no spread of the lesions. It is therefore essential that before a patient is allowed to enter on the final stage of his treatment, with decrease of rest and increase of exercise, his physician should, by comparing successive *x*-ray films, satisfy himself that the lesions are static.

When fever does appear in cases with spreading "intermediate" lesions, lesions which are probably secondarily infected, the chart is the common one seen in any chest hospital or sanatorium. The temperature rises gradually, being a little higher each morning and evening than the day before, with, eventually, a fairly constant daily swing. The temperature is thus of an intermittent type, generally below 98.4° in the morning and round about 100° at night, in a case of moderate activity. The height to which the temperature rises and the degree of the daily swing are some indication of the activity of the disease, and all stages between the chart described above and the hectic swinging fever (sometimes inverse in character) of rapidly advancing disease may be observed. The temperature characteristic of these lesions tends to settle with rest in bed, the rate at which it does so depending upon the activity of the disease, together with the resistance of the patient. Providing there has been no interference by any form of collapse therapy, the temperature caused by this type of lesion settles gradually by lysis in favourable cases.

During the period that a patient is pyrexial as a result of a spreading "intermediate" lesion infected with pyogenic organisms, it is still possible for a new "secondary" lesion to appear in his lungs. Should this occur there is a definite and characteristic alteration in the chart. The typical fever of the "secondary" lesion is imposed on that of the spreading "intermediate" lesion, and there is a sudden increase in the height and the swing of the fever, which gradually subsides until after a week or so the temperature is again back at the former level.

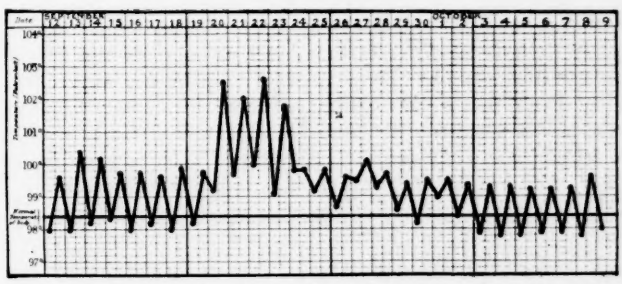


CHART 6.—Increase of pyrexia due to the appearance of a "secondary" lesion in a patient already carrying a spreading "intermediate" lesion.

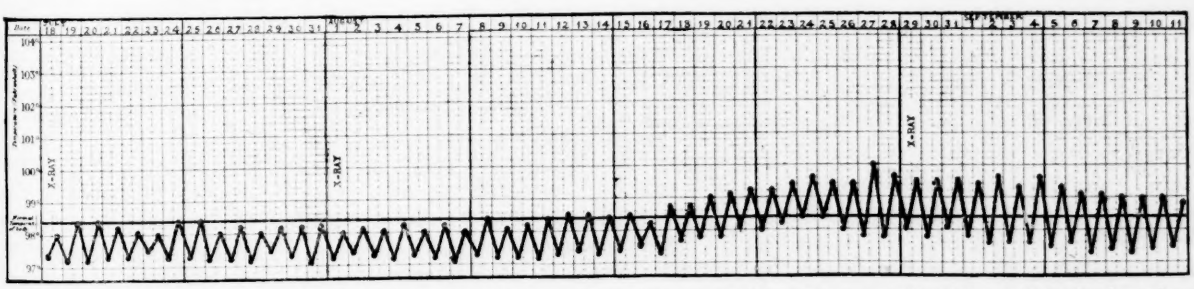


CHART 5.—Chart of a spreading "intermediate" lesion. Successive *x*-ray films taken on the dates indicated showed progressive spread of disease. Note the delay in temperature disturbance.

THE TERTIARY LESION

Theoretically, a patient with lesions in the "tertiary" or static state should be free from fever. In practice this is found to be so, providing the disease has not been gross. But in a case in which there has been a long period of illness, with prolonged pyrexia and much destruction of lung tissue followed by gross fibrosis, various abnormalities in the temperature chart may be seen. Although their disease is known to be static and they themselves are in good health, many patients with disease of this type run a constant mild pyrexia, which is apparently of no signifi-

cance. This is probably due to (1) secondary infection, by bacteria from the respiratory tract, of the various small cavities which remain in the interstices of the masses of fibrous tissue; and (2) alteration in the temperature control which has taken place as a result of prolonged pyrexia and toxaemia.

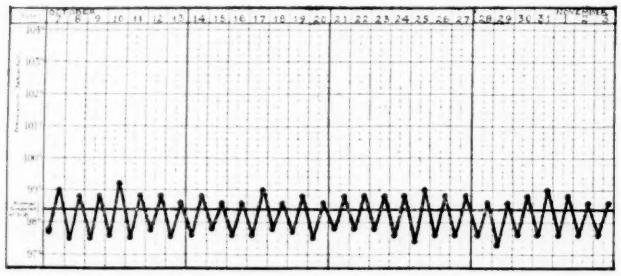
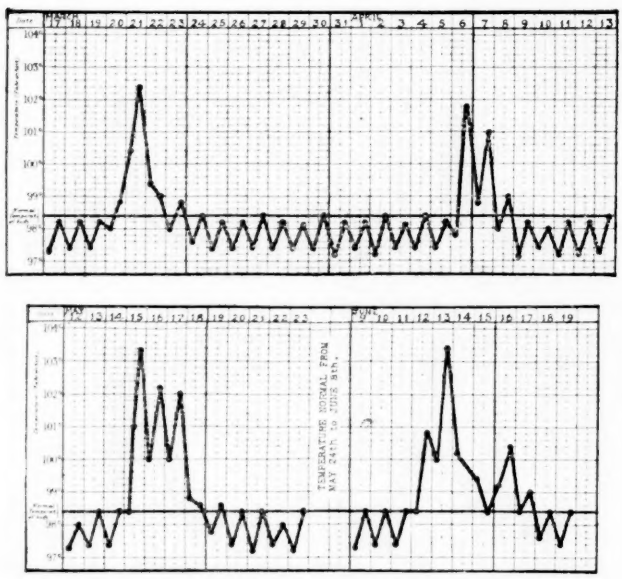


Chart 7.—Mild pyrexia with gross "tertiary" lesions.

Even though the disease is static, these non-progressive and inactive lesions often contain cavities. These cavities may be quite dry and give no symptoms whatever, or else they may be chronically infected from the respiratory tract with pyogenic bacteria, which may give rise to a mild pyrexia. In some patients very characteristic exacerbations of this secondary infection take place from time to time. The patient feels a little out of sorts for a day with some increase of cough and sputum (or sometimes with a sudden lessening of sputum), and his temperature may be slightly raised the same evening. The following day the temperature rises sharply to between 101° and 103°, and then settles rapidly to normal within five days. These attacks generally recur with some regularity, an interval of two weeks to three months elapsing between. The sudden rise of temperature is always accompanied by increased cough and sputum—both of which symptoms rapidly subside to their former level as soon as the temperature has settled. These attacks may be the only disability from which the patient suffers on account of his disease, but they are a serious handicap, and it is most important that they should be treated, both for psychological and for economic reasons. A streptococcus, not



Charts 8 and 9.—Examples of "secondary infection" attacks.

necessarily haemolytic, can often be cultured from the sputum collected at the height of the attack. An autogenous vaccine prepared from this is frequently efficacious in controlling the frequency and severity of these bouts of fever, and even in preventing them entirely, though it is to be noted that the sputum still shows the presence of the offending micro-organism.

The last type of chart to be discussed in connexion with the tertiary lesion is that produced by "late cavitation."[2] This occurs in a patient who has had fairly gross disease followed by massive fibrosis. He has probably enjoyed good health and been symptomless for many years. Then, usually when approaching middle age, he contracts a head cold or some other intercurrent infection of his respiratory tract. After a few days of mild pyrexia the chart shows a sudden steep rise associated with a marked swing, and the patient proceeds to expectorate a large amount of purulent material, perhaps containing some caseous lumps or calcified nodules. The temperature then falls rapidly, in some cases to normal; in others a constant mild pyrexia remains. In neither case does the patient get back to his former state of good health. Some cough and sputum remain, and his capacity for exertion is much diminished. The *x*-ray film shows that there has been no spread of disease. Any changes that may be seen are those of cavitation in the old fibrosed lesion. This cavitation is probably caused by the secondary infection of the caseous material which has remained quite silent for years in the interstices of the mass of fibrous tissue.

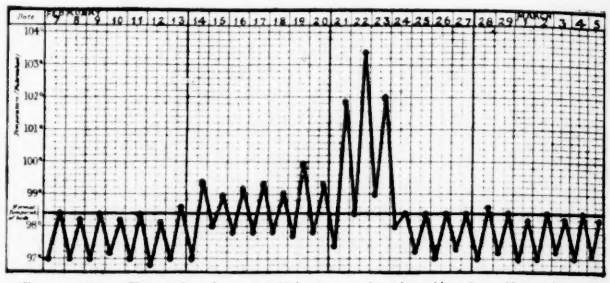


Chart 10.—Pyrexia due to "late cavitation" of a "tertiary" lesion.

Conclusions

1. It has been found that the various types of lesion in chronic pulmonary tuberculosis (as defined by Wingfield's classification) give rise, within limits, to characteristic changes in the temperature chart.

2. Spread (that is, activity) of the disease may occur in the absence of pyrexia. We can only assure ourselves that the disease is not spreading by examining a series of comparable *x*-ray films, taken at intervals, in conjunction with other clinical data.

3. Many cases of quiescent pulmonary tuberculosis suffer from frequent bouts of pyrexia, or may even exhibit a constant mild pyrexia, without there being any evidence of spread of the disease.

4. In view of the above, it is possible that pyrexia in chronic pulmonary tuberculosis is often caused by infection of the tuberculous lesions by the organisms of the respiratory tract.

5. Serial *x*-ray films are the most reliable guide to the spread or retrogression of the actual tuberculous lesions, but the temperature chart, especially when considered in conjunction with these films, gives us essential and valuable information.

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[2] Idem: *Brit. Journ. Tuberc.*, January, 1933.

Professional Note No. 69, issued from the Air Ministry by the Meteorological Office is entitled "The Frequency of Days with Specified Duration of Sunshine." The authors, E. G. Bilham and Lilian F. Lewis, discuss the incidence of sunshine in regard to the percentage frequency of days with (*a*) no sunshine, (*b*) more than three hours, (*c*) more than six hours, (*d*) more than nine hours, (*e*) more than half the possible duration. Data in the first four categories are given for eighteen stations, and in the fifth category for six selected stations. The pamphlet may be obtained from H.M. Stationery Office, price 3d., postage extra.

A CASE OF CUSHING'S SYNDROME

BY

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In view of the wide interest displayed in the syndrome recently described by Cushing, the following case, presenting the chief signs of that syndrome, may be worth placing on record.

History.—The patient, an unmarried woman of 35, when seen by Dr. Protheroe Smith of Topsham in April, 1934, complained of amenorrhoea for the last four months. The periods had begun at the age of 14 and had been regular, except during the first two gastric attacks referred to later. She also complained of pains, in various parts, of three weeks' duration, and of dyspnoea on going upstairs for the past week. For six or seven years she had had attacks of epigastric pain, vomiting, and occasional haematemesis. Such attacks were always accompanied by wasting and amenorrhoea. In 1928 *x* rays, test meal, and other investigations did not confirm the diagnosis of peptic ulceration. At that time her complexion was noted to be coppery red. In 1932, when there was another attack of haematemesis, a slight reduction was noted in the urine, and amenorrhoea persisted for nine months after this. In April, 1934, she was seen by one of us (C. M. S.), and the following note was made.

Examination.—A small, stoutly built, somewhat round-shouldered woman, with a thick growth of black hair going grey, a coppery red complexion, and an overgrowth of hair in the beard region, which had been controlled for some years by the daily use of pumice stone. Hirsuties was evident also to a slight extent on the breasts, which were atrophic, and from the umbilicus to the pubis and perineum, where hair was copious; there was a slight growth of hair on the back. Hyperalgesia was present all over, including the scalp and limbs as well as the trunk, being more marked on the left side. The trunk and limbs were pale, save that purpura-like ecchymoses were evident on the lower shins, which were cold to the touch and somewhat bluish. There were typical striae on the abdomen and thighs. The eyes were bright and somewhat exophthalmic, the disks and fundi normal, though the sight has recently become somewhat dim. The heart and lungs appeared to be normal; the blood pressure was 160/112 (previous records gave a systolic blood pressure of 126 in February, 1932). There was great tenderness of the left sacro-iliac joint, and to a less extent of the right joint, and the sciatic test was positive on the left side; there was no tenderness over the sciatic nerve itself. Knee-jerks were present and equal, ankle-jerks absent, and plantar reflexes not obtained. The abdomen was generally tender, but this appeared to be more marked under the right rib margin, where she constantly complained of more pain than elsewhere. The haemoglobin was 112 per cent., red blood cells 5.8 millions, white blood cells 10,000. *X*-rays showed normal filling of the gall-bladder, with a somewhat remote possibility of a stone in the gall-bladder region; a barium meal showed no abnormality, save for a speck of barium in the duodenum in the four-hour film.

Diagnosis.—These findings led to a diagnosis of chronic appendicitis, to account for her dyspeptic symptoms, and a pituitary basophilism. Before this second syndrome had established itself in our minds, however, an operation was performed in March, 1934, by Mr. Norman Lock, who found the appendix bound down by firm adhesions, but not inflamed. The uterus was infantile and ovaries fibrotic. Unfortunately, the suprarenal glands were not examined. Following this operation the patient's dyspeptic symptoms were for a time very much better. Her other symptoms were unchanged. When seen again in October, 1934, she felt fairly well and continued to be free from dyspeptic symptoms. Her weight was 7 st. 11½ lb. (having been 7 st. 2 lb. on leaving the nursing home). The blood pressure was 156/126. An *x*-ray of the pituitary fossa at this time showed it to be small, with floor intact, smooth, and of normal outline. She was then put on menformon injections without effect, save for a transient and abortive menstrual period. In December, 1934, haemoglobin was 122 per cent., red blood cells 6 millions, white blood cells 18,200. She was beginning to vomit more and to have bad headaches. The condition was advancing, and the diagnosis seemed to be between a pituitary or suprarenal lesion. Prior to admission to hospital for further investigation she was seen by another of us (W. L.-B.), who favoured the former diagnosis. At that time the bone and spinal pains were rather severe, and the flattening of the buttocks was marked.

Progress.—She was admitted to hospital in February, 1935. After admission she vomited several times a day, occasionally with blood, and latterly developed photophobia, with misty vision, occasional nystagmus, and double vision when the eyes were directed to the right or left. There was also severe occipital and vertical headache. She was given deep *x*-ray therapy to the pituitary fossa, but the headache was aggravated thereby, and this treatment was discontinued when about 50 per cent. of the total dose had been administered in small daily instalments. Her headache was somewhat relieved when *x*-ray treatment ceased. The optic disks were normal. She had always been euphoric, and had some mild delusions. The twenty-four-hour output of urine varied from 14 to 34 oz., averaging about 20; it contained a trace of albumin, a few granular casts, *B. coli*, and occasional small amounts of sugar. Other investigations gave the following results: blood urea, 36 mg. per cent.; Aschheim-Zondek test, negative; serum calcium, 10.2 mg. per cent.; basal metabolic rate, 27 per cent. A sugar curve showed a diminished tolerance, characteristic of this condition. There was no resting hyperglycaemia, but the blood sugar rose to nearly 220 mg. per cent. one hour after 50 mg. of dextrose, returning to normal at the end of two hours, when 0.4 per cent. of sugar was excreted, but no ketones. A further *x*-ray of the stomach and duodenum showed no sign of ulcer. *X*-rays of the bones showed no decalcification, but the bodies of the vertebrae were narrowed as if flattened by pressure. No abnormal shadows were seen in renal or suprarenal regions, and the heart and lungs were normal. The cerebro-spinal fluid under normal pressure showed no abnormality, and the Wassermann reaction was negative.

Except for the headaches, her condition is now improving.

Commentary

This case presents the three essential features of Cushing's syndrome—plethoric obesity, hirsuties, and amenorrhoea. It also presents other signs frequently associated with the syndrome, which are of almost equal importance—raised blood pressure, albuminuria (slight here, but accompanied by cylindruria), lowered sugar tolerance, and kyphosis with bone pains. Now that Houssay's observations on the influence of the anterior pituitary on glycosuria have been confirmed we can understand why basophilic adenomas in that gland are so generally accompanied by lowered sugar tolerance and sometimes by frank glycosuria. In a case seen by one of us (W. L.-B.) marked glycosuria requiring forty units of insulin a day occurred before any other evidence of the syndrome, though the full picture subsequently developed. This is unusual. In the present case the blood pressure, though variable, was generally raised, and on one occasion it was recorded at 180/120. High blood pressure is an almost constant feature of the syndrome, and malignant hypertension may close the scene.

Krans (1927) and Berblinger (1932) claim that an excess of basophil cells is found in the pituitary gland in a very large proportion of cases of persistently high blood pressure. In contrast with this Russell, Evans, and Crooke (*Lancet*, 1934, ii, 240) have pointed out that in Addison's disease, in which the blood pressure is characteristically low, there is a marked deficiency of basophil cells in the anterior pituitary. The low basal metabolic rate is uncommon. In two cases observed by one of us (W. L.-B.) it was definitely raised, in spite of the patient putting on weight. The Aschheim-Zondek test was negative, as, indeed, it has been in most of the reported cases where the test has been done. This reinforces Woollard's

criticism (*Proc. Roy. Soc. Med.*, 1934, xxvii, 271) that Cushing's syndrome lends no support to the view that the basophil cells are the source of the sex hormone. Certainly hirsuties and amenorrhoea do not suggest that the patient is over-feminized!

It is well known that it is extremely difficult to differentiate between adenoma of the adrenal cortex and pituitary basophilism. It is easier in the present case to exclude a primary thymic carcinoma as the cause of the syndrome, in view of its fairly long duration. The fact that the skiagram showed a small pituitary fossa does not negative the diagnosis of basophilism. The adenoma may be quite small, and has produced no alteration in the fossa in some of the verified cases. The repeated occurrence of haematemesis is of special interest now that E. C. Dodds and R. L. Noble have called attention to the intense haemorrhagic congestion in the acid-producing area of the gastric mucosa, which may result from injection of post-pituitary extracts. Although *x*-ray therapy produced a temporary aggravation of symptoms, general improvement seems to have occurred later. Marked improvement has been reported by Cushing and by R. D. Lawrence from this method of treatment, and had occurred in two cases recently shown at a meeting of the Association of Physicians in London.

On a balance of the evidence the pituitary seems likely to have been the initial factor here, as, indeed, it is in so many polyglandular syndromes.

PERITONSILLAR ABSCESS IN INFANCY

WITH RECORDS OF TWO CASES

BY

ALEX MACLEAN, M.B., Ch.B., D.P.H.

Peritonsillar abscess is a disease which is uncommon in childhood and rare in infancy. The occurrence of two cases in the first year of life is of interest and worthy of comment.

Case I

A boy, born on November 30th, 1933, was quite well until November 30th, 1934, when he became fretful and appeared to have pain in his left ear. On December 1st he was cross and unwilling to take his feeds, and the following day a swelling was noticed below, and in front of, the left ear; saliva issued from the mouth, which was kept open. The family doctor was called in on December 3rd, and administered tablets which produced sweating and promoted a short sleep. In the morning of December 4th the doctor visited the patient again and arranged for his removal to Ruchill Hospital as a possible case of diphtheria.

CONDITION ON ADMISSION

The patient was admitted to hospital on December 4th, at 1.45 p.m., when his temperature was 99° F., pulse 136, and respirations 38. He was a well-developed child. The pulse was soft and the colour rather grey; the skin was dry. The presence of a little chest retraction indicated respiratory embarrassment. There was slight retraction of the head and swelling and tenderness of the lymphatic gland at the left angle of the jaw. The mouth was open and the tongue dry and coated. The throat was inflamed and the left tonsil very prominent, particularly at its upper pole, from the presence of peritonsillar swelling; the left anterior pillar and the soft palate were oedematous. There did not seem to be any retropharyngeal swelling. Aural and nasal discharge were absent. There was nothing abnormal about the heart, lungs, and abdominal organs, and croup was not noted. Kernig's sign was absent and the anterior fontanelle was soft.

DIAGNOSIS AND TREATMENT

The condition was obviously one of left-sided peritonsillar abscess. The diagnosis was confirmed by aspiration through a hypodermic needle, and later by incision through the left anterior pillar, when yellowish, foul-smelling pus was obtained. Diphtheria antitoxin 8,000 units and 10 c.cm. (3,000 American units) of scarlet fever antitoxin were injected intramuscularly. On the day following admission the abscess was draining satisfactorily through the wound, but there was an appearance of yellowish membrane over the free surface of the left tonsil. The pulse and colour were improved and the patient slept comfortably and took feeds willingly. The tonsil was still inflamed on December 6th, and was covered with a thin film of greyish mucus; next day the tonsil was clean. Further recovery was uneventful, and the patient was dismissed well, with the throat wound healed, on December 14th. The organism isolated from the pus had the cultural and morphological appearances of *Staphylococcus pyogenes aureus*; throat and nose swabs were examined for *B. diphtheriae* and found negative.

Case II

A boy, born on January 28th, 1934, was well until December 5th of that year, when he became cross and had a convulsion. Next day a swelling was noticed at the right angle of the jaw. When the doctor first visited him, on December 7th, the patient had sore throat, shortness of breath, and a cough; later that day he had another convulsion. As time went on the symptoms continued and the swelling became larger. A throat swab on December 11th failed to yield *B. diphtheriae*. Excessive salivation was noticed on December 12th, and, distress in breathing becoming greater, the doctor was called urgently to see the patient in the early morning of December 14th. He decided to have him removed to hospital as a case of membranous croup.

EXAMINATION

The patient was admitted on December 14th, at 1.30 a.m., with a temperature of 98.4° F., pulse 128, and respirations 28. He was rather thin, but otherwise quite normally developed. The pulse was soft and the colour poor. Croup was absent, but slight chest retraction indicated respiratory embarrassment. The skin was dry, the head retracted, and the right submaxillary lymphatic gland markedly enlarged, the left gland to a less extent. The mouth was held open, and the tongue was dry and coated. There was a large amount of frothy mucus at the back of the throat, and the tonsils and fauces were inflamed, the right tonsil being very prominent from the presence of peritonsillar swelling. The protrusion of the tonsil was most marked at its lower pole, a good view being obtained only by firm depression of the tongue. Retropharyngeal swelling was absent, as were rhinitis and otitis. Kernig's sign was not elicited, and the anterior fontanelle was soft. The heart, lungs, and abdominal organs were normal.

The case was one of right-sided peritonsillar abscess. An incision was made through the right anterior pillar at 1.45 a.m., thick yellowish pus being obtained. The patient was given an intramuscular injection of 4,000 units of diphtheria antitoxin and was allowed to settle down. He remained comfortable until 6 a.m., when signs of shock set in; after making sure that local haemorrhage from the throat was absent, resuscitative measures were employed, and the patient was greatly improved by 9 o'clock. Convalescence was uneventful with the exception of the development of a mild serum rash on December 26th. He was dismissed on December 28th, the throat wound being healed. The pus yielded a pure culture of an organism which had the characteristics of *Micrococcus catarrhalis*; throat and nose cultures for *B. diphtheriae* were negative.

Cases in the Literature

In a search of the literature I have been able to find only one record of typical quinsy occurring in a patient under the age of 1 year—namely, peritonsillar abscess in an infant aged 9 weeks reported by Berman.[1] Coffin published details of a child of 21 months who died from haemorrhage complicating peritonsillar abscess.[2]

As compared with peritonsillar abscess in adults these cases have several interesting features. The onset of the disease may not be appreciated, the patient being unable to draw attention to his condition. The temperature is

comparatively low (in Berman's case the temperature before incision was 100.7°); in adults the temperature is often as much as 104°. Embarrassment of respiration and retraction of the head are more obvious than in adults. In both cases the patients were regarded by their doctors as suffering from diphtheria: the one because of the faucial condition, which, in the absence of a definite diagnosis and although not typical, was most likely at that age to be diphtheritic in nature; the other because of the respiratory distress which brought to mind the question of laryngeal diphtheria. However, the typical bulging of the tonsil and the absence of membrane and of croup were sufficient to correct the diagnosis in each case.

I am greatly indebted to Dr. W. M. Elliott, physician-superintendent of Ruchill Hospital, for permission to publish details of the above cases.

References

[1] *Arch. of Otolaryngol.*, 1934, xix, 710.

[2] *Ann. of Otol., Rhinol., and Laryngol.*, 1911, xx, 482.

Clinical Memoranda

"Tulip Fingers"

This preliminary note is published in the hope that fresh light may be shed on a condition which is causing great suffering in the English bulb fields. It is so bad that an eminent dermatologist is reported to have said that the sufferer's only hope of a permanent cure is to discontinue work among flowers and bulbs, a serious statement for those whose livelihood rests on the industry. "Tulip fingers" adds yet one more to the steadily increasing list of occupational diseases.

The tulip was introduced into Holland about 1554 by Busbecq, who was ambassador in Constantinople, and who probably obtained the bulbs from the Caucasus. Dumas gives a graphic account of the enthusiasm aroused for it in *La Tulipe Noire*. Until about thirty years ago all bulbs were imported direct from Holland; it was then realized that the soil of the Fen country was similar to that of Holland, and cultivation was started at Wisbech and Spalding. The industry is increasing rapidly in consequence of the import duties on foreign bulbs and flowers.

"Tulip fingers" occurs in Holland, but so far as can be ascertained no cure is known. It would appear to be more common in the case of a variety known as Coupland. Up to 85 per cent. of workers are liable to it, the remainder are immune. It occurs chiefly from July to October, when the bulbs are lifted and graded, and towards the end of this period a certain amount of immunity develops. It also occurs during the flowering season, especially when the flowers are pulled instead of cut, and even more so when the bulbs are cut open to increase the length of otherwise short-stalked varieties. As women do most of this work, it is not surprising that they should be the worst sufferers.

CLINICAL SYMPTOMS

These begin twelve hours after handling the bulbs, and are characterized by intolerable tingling of the fingertips beneath the nail, which become exquisitely tender. An exudation of serum now occurs, followed by a line of granulation tissue between the nail and its bed. Later the nail separates from its bed, leaving a keratinous ridge. Often three or more of these may be visible. The nail itself becomes shortened, and is so brittle that the cutting of one corner with nail clippers results in the whole nail splitting across. Bad cases may develop subungual abscesses; "water blisters" on the dorsum of the fingers, which often extend into the clefts, characterize advanced cases. There would appear to be another form resembling eczema which occurs in subjects who have once had the disease without having handled flowers or bulbs. This responds to the same treatment.

AETIOLOGY

No cause is known, but three theories have been put forward. *Mechanical*:—The brown outer shell of the bulb, known as the testa, is very sharp and brittle, and it has been suggested that this lacerates the finger in its more exposed part—namely, the junction of the nail and its bed. Against this is the fact that the testa does not usually separate from the bulb as it does in the case of the hyacinth and narcissus, neither of which causes any trouble. The wearing of cotton or leather gloves fails to give any protection, as it would if this were the cause. *Acid secretion*:—The bulb itself has a 4.2 per cent. normal acid reaction, whilst the testa is neutral. It has been surmised that the acid percolates through the testa and so affects the nail bed. *Bacterial*:—Though no organisms have as yet been grown from the bulb, two features suggest a microbic origin, probably saprophytic and spirochaetal. The first of these is the response observed to strong antiseptics, the second is the fact that rubber gloves prevent the occurrence of the disease.

TREATMENT

In the past the only known means of protection was the wearing of rubber gloves, but these are so readily damaged—unless stout, when they interfere with movement—that they were discarded. Plunging the fingers in water as hot as can be borne gives some relief. Various ointments have been tried and found useless. On the assumption that the disease has a bacterial origin, spirit of hydrarg. biniod. (1 in 1,000) is now being used with good effect. Workers are instructed to apply it on a pledget of wool on a match stalk before starting work. Not only does this often prevent occurrence of disease, but it is applicable when the condition has developed, though the initial smarting is painful. It is not a specific, as some cases fail to respond, but so far as can be determined it is the only preparation with any effect on the condition.

I beg to express my best thanks to Dr. Booth, medical officer of health of the Holland Division of Lincolnshire, and to Mr. D. Horton of the Kirton Research Station, for their generous help.

A. P. Bertwistle, F.R.C.S.Ed.

Repeated Ectopic Gestation

The following case of two ectopic gestations occurring within eight months in the same woman seems worthy of record.

The patient was a Zulu woman, aged about 25 years; she had never previously been pregnant, and gave no history suggestive of gonorrhoea. Her health had always been good, with normal menstruation, until October, 1934, when she was brought to St. Mary's Hospital, Mariannhill, with symptoms of ruptured ectopic gestation. Operation by my predecessor, Dr. K. F. McMurtrie, revealed a gestation sac the size of a golf ball in the right tube, with a quantity of blood in the pelvis. Salpingectomy was performed, and she made a good recovery. I saw her just before she left hospital at the end of October last year.

On May 10th, 1935, she was again admitted here, complaining of lower abdominal pain. Her history was very vague, but the pain had been present for a few days. She had missed her period the previous month, but had again observed blood per vaginam for one day only in the present month. On examination a tender mass could be felt in the left iliac fossa, which moved with the uterus on bimanual

examination. No signs of pregnancy could be discovered: the breasts were normal, the cervix firm, and the os closed, with only a slight amount of white discharge issuing from it. Temperature and pulse were 100° F. and 110. A tentative diagnosis of left tubal abscess with pelvic peritonitis was made, and frequent douches and Fowler's position instituted.

She improved greatly until the evening of the fifth day afterwards, when she developed severe colicky pains in the region where the mass could be felt. Emergency operation was undertaken under spinal anaesthesia, and the incision through the former scar disclosed a second ectopic gestation sac in the remaining (that is, the left) tube, with a large blood clot in the pelvis. The mole was again the size of a golf ball, and was partly extruded through the fimbriated end of the tube, which no doubt accounted for the colicky pains. Salpingectomy was performed and recovery has been uneventful.

I should like information on the following points. (1) What is the frequency of repeated ectopic pregnancy? (2) Is it common to find none of the usual signs of early cyesis in cases of extrauterine gestation? Except for the missed menstrual period the previous month this woman presented none of the classical signs.

St. Mary's Hospital, Mariannhill, Natal S. Nicol, M.B., B.S.

Rupture of Spleen with Delayed Haemorrhage and Spontaneous Cure

The following case of rupture of the spleen is reported because it shows a combination of two unusual features: delayed haemorrhage and spontaneous cure.

The patient, a male Yoruba, aged 33, fell from his cycle and hurt his abdomen and left shoulder; he stood up and fell down again because his abdomen was "mixed together." He then walked home, about 180 yards, with assistance. During the following week he got better and was able to walk about; six days after the injury his abdomen started to swell and this continued for a week, during which he was unable to eat or walk. The condition apparently remained stationary for two weeks and he was then brought to hospital; he walked into the consulting room.

On admission he was ill, wasted, and anaemic, but not blanched. His abdomen was much distended with fluid and there were dilated veins on it. He complained of severe abdominal pain. A diagnosis of ruptured spleen was made and a splenectomy was decided upon. Two days later the abdomen was opened under general anaesthesia and nine pints of fluid blood were removed. The intestines and stomach were covered with fibrin, against which the smooth grey capsule of the spleen stood out in contrast. The spleen was slightly enlarged, and there was a transverse tear in the outer surface about two inches long; the tear was filled with firm, organizing clot; as there appeared to be no bleeding the spleen was not removed and the abdomen was closed.

After the operation the patient was unruly and interfered several times with his dressing. Possibly as a result of this his abdomen began to fill up and on the tenth day a pint of blood was removed by tapping; clotting in the cannula prevented evacuation of more. The incision became infected, and two weeks later there was a sudden discharge of two pints of pus from the wound, after which the patient made an uninterrupted recovery and was discharged after seven weeks in hospital.

Ilesha, Nigeria. E. A. Hunter, M.B., B.S.

G. Illyés (*Orvosi Hetilap*, March 9th, 1935, p. 255) summarizes his findings with cases of tumour of the kidney, bladder, and prostate. In 154 cases of kidney tumour hypernephromata were the commonest, and were usually recognizable pyelographically. Retroperitoneal operation, which gave a mortality of 2.7 per cent., is recommended. In 385 cases of tumours of the bladder 56.6 per cent. were papillomata and 43.4 per cent. carcinomata. Resection of the bladder wall is recommended where possible (mortality 9.2 per cent.), or radium and repeated *x*-ray treatment. In 325 cases of prostatic tumour the best cases were those of prostatectomy for hypertrophy; the operative mortality was 12.1 per cent.

Reviews

FEEDING BOYS OF SCHOOL AGE

The Schoolboy, his Nutrition and Development,[1] by Dr. G. E. Friend, is by far the most important contribution that has yet been made to a subject rapidly commanding increasing attention, and it will be welcomed by all who are interested in the problems of feeding boys of school age. Here we have an analysis of statistics and observations dealing with a population of some eight hundred boys over a period of twenty years at Christ's Hospital. These twenty years are divided into four distinct periods, corresponding to important alterations in diet factors:

(*a*) **1913–16**. Before any rationing on account of war conditions.
(*b*) **1916–22**. When State rationing and other conditions qualified the diet.
(*c*) **1922–7**. When a change in administration led to improved service and diet.
(*d*) **1927–33**. Marked by an increase in butter and milk.

A survey of these periods is then made from three different standpoints—namely, diet, development, and health—and finally the three surveys are linked together in an interesting summary. The first series of calculations reduce the term's food supply to the allowance per head in calorie value of carbohydrate, protein, and fat in the diet. A comparison is then made with tables showing the development ratio, taken from measurements of height, weight, chest expansion, etc. Finally the record of ill-health is studied over the same period. In spite of the many difficulties in expressing by figures these records and accurately interpreting them, Dr. Friend makes manifest the broad conclusion that the balance of a diet of a sufficient calorie value affects not only development but also the incidence of ill-health in the school community.

The book contains a very large number of tables and graphs, and is a monument of painstaking records, of which no doubt further use will be made. We congratulate Dr. Friend on an outstanding contribution to a subject which is daily engaging more attention, and which shows in a highly condensed form the observations of many years. It is a book which every school doctor will need in his library, if only as a book of reference. We heartily endorse the expression in the foreword by Professor Drummond that "the investigation which Dr. Friend has carried through with enthusiasm and constant care will mark a turning point in the history of the practical nutrition of the schoolboy." There is an early chapter of much interest from the historical point of view, with references to the feeding of the boys at Christ's Hospital since the middle of the sixteenth century.

AN OUTLINE OF GENETICS

The very modern science of genetics has already acquired a high degree of exactitude, and in its most advanced form displays a somewhat formidable mathematical trend. Its development, in fact, is now so rapid that anyone but the expert specialist finds difficulty in keeping pace with it; and those who can accurately, agreeably, and authoritatively expound it to the ordinary intelligent reader are but few in number. Yet it is to such a reader and to all thinking persons perhaps the most important and fascinating of present-day subjects. Happily Dr. C. C. Hurst has come to the rescue of the general reader, and of others who have more forcible reasons for desiring

[1] *The Schoolboy: A Study of his Nutrition, Physical Development and Health*. By G. E. Friend, M.R.C.S., L.R.C.P. Cambridge: W. Heffer and Sons Ltd. 1935. (Pp. 128. 7s. 6d. net.)

instruction, with a really wonderful little book entitled *Heredity and the Ascent of Man*.[2] In less than one hundred and forty pages he gives a rapid review, quite adequate for its purpose, of evolutionary progress from the bacteriophage to the mind of man, explains the creative mechanism of the chromosomes and genes, describes the results of the latest experiments in irradiation of the gene complex and the ways in which new species are being created to-day, and even indulges in some highly suggestive speculations as to the direction which the further progress of evolution may take.

The book is, of course, only a sketch of these things, but the writing is so lucid, and the matter ordered so clearly and logically, that it is full of information, gives a most useful general idea of the nature of the science of genetics and the work that is being done in it, and is a pleasure to read. There is no mathematics here, and there are remarkably few technicalities of phrasing, yet no one reading the book carefully can fail to grasp the nature and importance of the mutations of genes, the transformations of chromosomes, the effect of sex differentiation, and the relation of these things to natural selection and organic evolution. Dr. Hurst's exposition in such short compass is, as he says, necessarily limited and circumscribed, yet it is a most admirable introduction to its subject, and will surely induce many of its readers to pursue much further the questions with which the author deals. It is to be feared that there are still some medical students and practitioners who have not yet realized the essential value of recent progress in genetics in tackling the problems with which they are practically concerned; and to them this book will be no less useful than to others.

MODERN GASTROSCOPY

Knowledge of gastric disease has been advanced largely through improved technique of investigation. Recent *x*-ray work has produced a definition in the resulting radiograms from which inferences as to the detailed condition of the mucous membrane may be made with some assurance. But this can be turned into certainty in many instances by the use of modern gastroscopic apparatus. A full and detailed account of the methods and results of gastroscopy has recently been published by Dr. FRANÇOIS MOUTIER.[3] In an introductory note Professor Duval, in whose clinic the work has been carried out, points out that the method of gastroscopy was invented some seventy years ago. It was rather a difficult and dangerous extension of oesophagoscopy when the rigid tube was used; the patient was deeply under a general anaesthetic, and the results obtained were not often worth the trouble taken. Since the invention of the flexible gastroscope much new knowledge has been gained. The apparatus can be introduced after local anaesthetization of the fauces and upper gullet, with the patient lying comfortably on a special table which allows of his rotation without interference with the tube.

The types of apparatus and their application are set out in detail in the book under review. Workers on gastroscopy must learn a new orientation in regard to the stomach, which differs from the descriptions of the anatomists and radiologists. Since the task is to see as much of the stomach lining through the end of the tube as possible, the method adopted is by rotating the patient and tube to bring successive portions of stomach into visual range. The left lateral posture is the one usually adopted, so that the pylorus may fall towards the end of the gastroscope. Even after the introduction of the instrument, however, there is much to be learned of the normal and abnormal appearances that are likely to be encountered. Here the worker will be well repaid by reference to Moutier's book, since the appearances are not only described clearly and in detail, but are illustrated in a series of beautiful coloured drawings, which cover the range of gastric lesions. As might be expected, much space is given to the appearances of the normal plications of the gastric mucous membrane and the modifications that occur in gastritis, ulcer, syphilis, and growth.

Those interested in the revival of the notion of gastritis will find much of value in the discussion and illustrations, while direct evidence of the surface condition and surroundings of an ulcer must help much in guiding the treatment laid down. Throughout the book the gastroscopic appearances are correlated with radiograms of similar cases. This is the first book on gastroscopy that has been published in France, and it should become a standard work on the subject.

DIGITALIS AND ITS CONGENERS

The first supplementary volume of HEFFTER'S "Handbook of Experimental Pharmacology" appears under somewhat unusual circumstances, since the original volume is not yet completed. This work was designed in the first decade of this century, and many articles were written before the war, although publication was only commenced in 1921. Completion of the original work is promised for this year, but meantime some important monographs have become entirely out of date. The volume under review[4] contains a single monograph—namely, an article of 250 pages—by Professor LENDLE, on digitalis and allied glucosides. The article on this subject in the original volume was written by Professor W. Straub in 1914, and the present article is concerned chiefly with the advances made during the last twenty years. The author has reviewed the subject in a very competent manner, and an account is given of all work of importance that has appeared since 1914.

The general impression gained from this survey is that the advances of chief importance are those which have been made by the chemists. Twenty years ago very little was known regarding the chemistry of these substances, but the work of Jacobs and of Windaus has revealed the general structure of these glucosides, and the structural formula of the toxigenin strophanthidin has been ascertained. The remarkable fact has emerged that strophanthidin has a ring structure similar to cholesterol, and Windaus has shown that substances with antirachitic properties can be produced by ultra-violet irradiation of these toxigenins. Biological standardization is another field in which great advance has been made during the last twenty years. Although chemical assay of the glucosidal content of the pharmacopoeial preparations of these drugs has not yet been attained, yet their potency can be assayed accurately by the modern methods of biological standardization. As regards the action of these glucosides on animals and man one may say that the steady general advance in knowledge has not been punctuated by any dramatic discoveries.

The mode of progress of the pharmacology of digitalis during the last twenty years is typical of that of pharmacology in general. Biochemistry is advancing at present at a remarkable speed, and it is difficult, if not impossible, for pharmacologists to keep pace with this advance and to ascertain what actions on living tissues are produced by even a small fraction of the new compounds of

[2] *Heredity and the Ascent of Man.* By C. C. Hurst, Ph.D., Sc.D. London: Cambridge University Press. 1935. (Pp. 138. 3s. 6d. net.)

[3] *Traité de Gastroscopie et de Pathologie endoscopique de l'Estomac.* By François Moutier. Paris: Masson et Cie. 1935. (Pp. 348; 89 figures, 24 coloured plates. 120 fr.)

[4] *Handbuch der Experimentellen Pharmakologie.* Begrundet von A. Heffter. Band I. Berlin: J. Springer. 1935. (Pp. 265; 37 figs. RM. 32.)

probable biological or therapeutical importance that are being isolated. This theme is expounded in a short article contributed by Professor Hans Horst Meyer, the doyen among pharmacologists. He has assisted the growth of pharmacology from its infancy, and points out the increasing importance of the science at the present time. The analysis of the actions produced by chemicals on living tissues is a subject beset with special technical difficulties, yet not only does it form the rational basis for therapeutics, but it is also of great importance in many other respects. New reagents are constantly being introduced into industrial chemistry, and also into household use, and apart from these looms the spectre of chemical warfare. The protection of the population against the possible menace associated with these changes depends on our power to measure accurately the action of drugs on living tissues, and for these reasons Professor Meyer emphasizes the great importance of adequate recognition of this branch of science.

THE INGENIOUS MR. HOOKE

It was a good thought on the part of Mr. Henry W. Robinson, librarian of the Royal Society and of Mr. Walter Adams to transcribe and print *The Diary of Robert Hooke*,[5] the inventor of the balance spring for watches, a pioneer in aerostatics, and the conductor of experiments at the Royal Society. Robert Hooke has been known to us as a somewhat morose and quarrelsome person, who nevertheless had well earned his title of the "Ingenious Mr. Hooke." The diary shows the human and intimate side of his character, with unexpected and very interesting results. He appears as a martyr to chronic septic absorption, probably from inflammation of his frontal sinuses, a dyspeptic never well for many days together, with marked scoliosis, and a constant taker of all kinds of nauseous medicines to cure his costiveness or relieve his indigestion. It is no wonder that his acquaintances found him querulous and that he made many enemies. In spite of these handicaps he did much good work as a surveyor and architect whilst London was being rebuilt after the Great Fire. He superintended the building of Bedlam at Moorfields, of the College of Physicians in Warwick Lane, of the mathematical portion of the Bluecoat School and of Merchant Taylors' School in Suffolk Lane, where John Goad, classical scholar and astronomer, was head master, and, last but not least, of the Monument on Fish Street Hill. The diary bears out much that his contemporary Samuel Pepys has already told us, but Hooke was built upon a smaller scale than the great diarist. The same figures appear—Christopher Wren, Lord Brouncker, Sir William Petty, Needham, Grew, Sir George Ent, Sir Charles Scarborough. All were well known personally both to Hooke and to Pepys. There is the same curious mixture of classes. "The King smiled upon me and did call me by name" is very reminiscent of Pepys. Bishops, noblemen, and commoners mixing and dining together on equal terms; Hooke dining and supping with his sewing maid, and on more than one occasion sleeping with her. The same sexual irregularities, but as Hooke never married he was spared the tragedy of the "Deb" episode. Domestic servants presented the same problems; Hooke only kept one at a wage of £3 a year, but they were constantly changing, were "intolerably lazy," or "became insufferable." "Betty out all day so I went hungry." The same irregular meals taken abroad at taverns and coffee-houses (the editors give a list of 108 mentioned or frequented by Hooke). Bribes, too, given and received, but on a comparatively small scale; "a dozen of wine delivered I know not where from." All reminds us of Pepys. The diary begins abruptly on March 10th, 1671/2, and ends for all practical purposes on Friday, December 31st, 1680. Hooke was 37 when he began it.

The transcribers have done their work well. They have not overburdened the text with notes, and, despairing of a satisfactory index, have contented themselves with a "biographical index." They have added a brief sketch of Robert Hooke's life, and there is a pleasant introduction by Sir Frederick Gowland Hopkins, President of the Royal Society. It is a fitting tribute to one who is deservedly looked upon as the Father of the Royal Society, for without his experimental genius it might have failed entirely or have become wholly theoretical.

[5] *The Diary of Robert Hooke, M.A., M.D., F.R.S., 1672–1680.* Transcribed from the Original in the Possession of the Corporation of the City of London (Guildhall Library). Edited by Henry W. Robinson and Walter Adams, B.A. London: Taylor and Francis. 1935. (Pp. 527; 11 illustrations. 25s.)

Notes on Books

A fourth edition of *Gould's Medical Dictionary*[6] has reached us from Messrs. H. K. Lewis and Co., who publish it in this country, and the preface mentions that the world-wide sales of Gould's dictionaries are now, in number, on the road to 900,000. Our description of Dr. George M. Gould as "the Johnson of Medical Lexicography" appears opposite the title-page, which now includes the name of Mr. C. V. Brownlow as joint editor with Dr. R. J. E. Scott. The subtitle of this excellent reference book describes in the shortest way its scope and purpose: "The words and phrases generally used in medicine and the allied sciences, with their pronunciation and derivation." The 1935 edition contains a large number of new words "which elucidate the new conditions and methods that gave them birth." There are also many corrected older definitions, which advances in medicine and chemistry have made necessary. A useful addition is the four-page table of medical and chemical prefixes and suffixes. Notwithstanding many new inclusions and much revision, the number of pages is the same as before; this has been effected by skilful condensation in the resetting of the type of the pages on which the changes were made. During the past forty-five years Dr. Gould and his able successors have kept before them a threefold aim—accuracy, comprehensiveness, and practical utility—and their policy has been to insert nothing that is not appropriate.

John Wright and Sons Ltd. have just published their extremely valuable *Medical Annual General Index and Review*, covering the period 1925–34 (price 12s. 6d.). In addition to the customary index, in which can be found all references to the last ten *Medical Annuals* under the various headings, an innovation is provided in the setting aside of some fifty pages for a survey of the progress made in various subjects during the decade and an assessment of the present position. Thirty special subjects are thus covered, the space devoted to each varying between four and ten pages. The articles constitute an excellent, if brief, review of up-to-date opinion on medicine in its various branches, and will enable readers to refer rapidly to the original papers which have contributed to recent advances. Much praise is due for this new venture, which provides an invaluable means for the rapid investigation of almost every subject in the range of medicine.

The deleterious effects produced on pigeons by feeding with white rice have been explained by three hypotheses—namely, (1) the vitamin theory, (2) the toxic theory, (3) the "deficiency-toxin" theory." Teru-Urchi and collaborators (1929) claimed to have proved the existence

[6] *Gould's Medical Dictionary*. By George M. Gould, A.M., M.D. Edited by R. J. E. Scott, M.A., B.C.L., M.D., and C. V. Brownlow. Fourth revised edition. London: H. K. Lewis and Co. Ltd. 1935. (30s. net.)

of the hitherto hypothetical rice toxin. I. A. SIMPSON[7] made a series of experiments, and showed that extracts could be prepared from rice which were toxic to pigeons when injected intramuscularly. He isolated a bacillus of the *vulgatus* group from rice, and cultured it on rice media. Extracts of these cultures also were toxic to pigeons. The toxic effects thus produced were, however, totally different from avian polyneuritis or beri-beri. These results, therefore, yield no support to the oryzation theory, nor do they support the claims of Acton and Chopra that a bacillus of the *vulgatus* group can produce a toxin in rice which gives rise to symptoms similar to those shown by cases of beri-beri.

[7] *The Oryzation Theory.* By I. A. Simpson. Bulletin from the Institute of Medical Research, Federated Malay States, No. 1, 1934.

Preparations and Appliances

SPECTACLES FOR "SPINAL" CASES

Mr. A. MCKIE REID, *M.C.*, F.R.C.S. (Liverpool), writes:

Many people suffering from spinal lesions, rheumatic carditis, and other diseases are doomed to spend months, and even years, in a completely supine position. Such a posture inevitably curtails the patient's reading, a serious matter when one reflects upon the part played by books in the amusement of the adult and the education of the child.

Reading in the supine position is usually achieved by: (*a*) holding the book above the face by means of the hands or an elaborate book-rest, or by (*b*) resting the book on the chest and strongly infraducting the eyes. The discomfort involved in either of these positions is manifest. Moreover, one cannot fail to be struck by the high incidence of "school" myopia in prostrate children. Admittedly, the generally debilitated physique is a predisposing cause; nevertheless, it is inferential that the unusual tension produced by convergence and excessive infraduction may play an important part.

I have attempted, as described below, to solve the optical and other problems involved.

Consider a prism with apical angle of **35** degrees and basal angles of **70** and **75** degrees. A beam of light (see Fig. 1) from an object AB (for example, a line of type) after refraction at the surfaces of the prism and double internal reflection in the prism will emerge through the base and be directed towards the eye.

An erect, equal-sized image is projected to A'B', at a distance equal to that of AB from the eye but with an elevation of **70** degrees. In other words (see Fig. 2), the patient is able to read a book held comfortably on his chest without straining his eyes into any abnormal orientation. The infraduction is no greater than in normal reading.

An occluding shield prevents light entering at the apex, the upper surface of the prism is mirrored, and the sides are blackened (see Fig. 3). The base of the prism is directed towards the eye and the prisms are mounted in a frame that will fit over pre-existing spectacles; or the patient's own correction can be placed in the frame, the prisms sliding in cells immediately in front of the lenses. This sliding feature, moreover, allows for intrapupillary adjustment. Angling or "billiard" joints may be added, if required, to facilitate adjustment.

The base of the prism measures three-quarters by two-thirds of an inch, and the apex projects seven-eighths of an inch in front of the spectacle frame. There is no distortion of the image and no chromatic aberration, as a given ray enters and leaves the two refracting surfaces at approximately equal angles. The weight is not greater than that of cataract lenses. The spectacles can be, and indeed have been, used for fine needlework and prolonged reading.

The field is greatest when the visual axis for a central point traverses the prism in a direction approximately parallel to the silvered surface, as in Fig. 4. A suitable position can be obtained by adjusting the height of the bridge, or by angling the joints if "billiard" hinges are fitted. Forward or backward tilting of the prisms makes no change in the direction of the projected image, owing to the double reflection, but it increases or decreases the vertical extent of the effective field. In this way some selection of the field can be made with relation to the patient's pupil (compare Figs. 4 and 5).

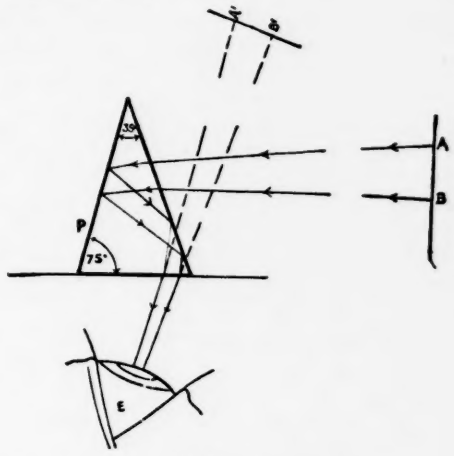

FIG. 1

E = Eye of recumbent patient directed towards ceiling.
P = Prism-spectacle.
AB = Book, etc., held on chest.
A'B' = Image projected in front of patient's eyes.
(Scale: approximately full size.)

FIG. 2.

FIG 3.

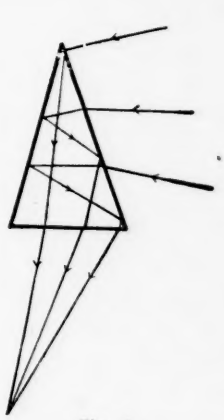

Fig. 4.

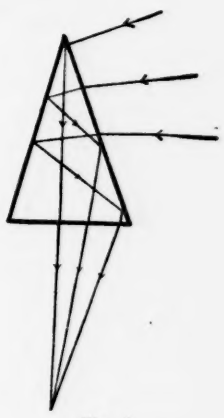

Fig. 5.

My suggestions have been admirably carried out by Messrs. Hamblin of Wigmore Street, W., from whom the "spinal spectacles" can be obtained. The appliance was shown at the Oxford Ophthalmological Congress (July 4th, 5th, and 6th, 1935).

British Medical Journal

SATURDAY, AUGUST 10th, 1935

THE MOTOR CORTEX IN MAN

The selection of London as the meeting-place of the second International Neurological Congress, and of 1935 as the year of meeting, was designed to link the Congress with a celebration of the centenary of Hughlings Jackson's birth. It was peculiarly fitting, therefore, that the Hughlings Jackson lecture of the Neurological Section of the Royal Society of Medicine should have been arranged for the week of the Congress meeting. Although not part of the official programme, it was perhaps the climax of the proceedings, and no more suitable tribute to Jackson could well be imagined than the conjunction of the eloquent lecture which Professor Otfrid Foerster delivered and the distinguished audience of neurologists from all parts of the world which crowded the Great Hall of the British Medical Association's House, under the presidency of Dr. S. A. Kinnier Wilson, to hear it. Lecturer, audience, and setting all contributed to a historic occasion which will always be remembered by those who took part in it.

The subject of the lecture was "The Motor Cortex in Man in the Light of Hughlings Jackson's Doctrines." It is difficult to appreciate the once revolutionary character of ideas which seem commonplace to-day, and it requires a considerable effort of imagination to envisage the conceptions of the nervous system which were current when Hughlings Jackson began his work. The motor functions of the cerebral hemispheres were then unknown, and epilepsy was believed to be the manifestation of a disorder of the pons and medulla. Jackson's achievement was the more remarkable, as Professor Foerster pointed out, in that it was not the outcome of physiological experiment and it anticipated the observations based upon electrical stimulation of the cerebral cortex. Jackson relied upon the experiments conducted upon man by disease and his own incomparable power of deductive reasoning. His conception of the localization of movements in the motor cortex has withstood the test of sixty years' experience, and remains to-day, as Professor Foerster said, substantially unchanged.

Subsequent work to which Professor Foerster himself has greatly contributed has confirmed other ideas of Jackson's, with which at first sight the localization of motor centres in the precentral convolutions might seem to be in conflict. Jackson believed that no part of the cerebral hemispheres was purely motor or purely sensory, and so it has proved, for Professor Foerster, by electrical stimulation of the cerebral cortex in man, has demonstrated the existence of excitable areas other than the precentral convolutions from which complex movement and postures—motor synergies—can be elicited. These extra-pyramidal motor centres are, he believes, the source of the relatively cumbersome movements of which the hemiplegic patient may remain capable after damage to the pyramidal tract, and when such a centre is the site of a discharging lesion the resulting convulsion bears its local signature in the form of the movements and postures of which it is composed. Thus, in addition to the Jacksonian convulsion with its characteristic spread depending upon the representation of parts of the body in the precentral convolution we have learned to recognize other focal convulsions, both motor and sensory, originating in excitable areas in other parts of the cerebral hemispheres.

Other observations of Professor Foerster have confirmed Jackson's essentially dynamic conception of cerebral localization. Repeated electrical stimulation of the thumb area is not followed by movements of the thumb alone, but after a series of thumb movements movement of the fingers may be elicited. This shows that cerebral localization is not an exclusive, but merely a predominant, representation of a part of the body in a certain region of the precentral convolution, other parts being represented, though to a less extent, in the same spot. Plasticity rather than rigidity is thus a feature of cortical function even at Hughlings Jackson's "middle level." Though Jackson's work on the localization of the motor functions in the cerebral cortex is the most generally known of his contributions to knowledge, there is, as Professor Foerster said, no branch of neurology in which his insight is not equally well exemplified. Medicine's debt to Jackson could not be better expressed than in Professor Foerster's peroration. It had been said that outside the blind forces of nature nothing moved in this world which was not Greek in origin: so in the world of neurology nothing moved which was not in origin Jacksonian.

GIANT-CELL TUMOUR OF BONE

The question of the most effective treatment in cases of giant-cell tumour of bone has recently been attracting a good deal of attention, and the tendency appears to be in favour of curetting in early cases in preference to irradiation or amputation. A case was reported in 1898 by Dr. Frank Hinds[1] of Worthing in which a man of 34 had been operated on three years previously for a myeloid sarcoma of the lower end of the femur. This was treated by curettage and the scrubbing of the surface of the cavity left after removal of the growth with zinc chloride solution. A Thomas knee splint was worn for nine months. The man is still alive, and Dr. Hinds, in a personal communication, reports that during the last forty years his health has been uniformly good. The knee-joint is practically stiff from fibrous ankylosis, but the man is able to get about well, was able to superintend timber-felling during the war, and has been capable of carrying out his occupation as a wheelwright. He only gave up riding a motor cycle two years ago at the age of 72. Radiograms show that

[1] Hinds: *British Medical Journal*, February 26th, 1898.

the shape of the bone has not materially altered since the operation, and that the interior of the cavity is filled with fibrous tissue. This case demonstrates that the myeloid tumour was only locally malignant, and that scraping and scrubbing with a strong disinfectant resulted in a lasting cure.

Dr. J. C. Bloodgood of Baltimore was influenced by this case, and in 1902 he treated a giant-celled tumour in the upper end of the tibia by curettage and swabbing, first with pure carbolic acid and then with alcohol. From his subsequent experience Bloodgood is firmly of the opinion that, for cases of giant-cell tumour—particularly when they occur in the long bones—curettage, followed by exploration for biopsy, is the procedure of choice. It is of the greatest importance that operative treatment should be carried out in the early stages, following a short period of pre-operative irradiation. At the time of operation care should be taken to remove every particle of affected tissue, otherwise recurrence will inevitably take place. Where the bone shell is intact recurrence is not likely if the curetting has been properly performed, but when the bone shell is perforated it is possible for tumour tissue to have grown outside the bone and to be missed at the curettage and chemical cauterization. Bloodgood is of the opinion that at present too much time is spent on irradiation, which may delay surgical treatment until amputation is the only possible treatment.

Mr. Harry Platt[2] of Manchester, in a paper presented before the Clinical Congress of the American College of Surgeons at Boston last year, gives his views on the subject. He considers that, in carefully selected cases, curettage should be the operation of choice. In regions where a local resection can be performed without undue mutilation, this is preferable to curettage, and where recurrence has followed the latter operation the second procedure should be either resection or amputation. Platt considers that the effective scope of curettage has been extended by the use of post-operative irradiation. In a large group of cases of giant-cell tumours from the American Bone Sarcoma Registry, analysed by C. C. Simmons some years ago, the cures following curettage alone were 62 per cent., but were raised to 72 per cent. following the combination of curettage and irradiation. Radium implantation after incomplete curettage and chemical cauterization was successful in a large haemorrhagic giant-cell tumour of the ilium which had burst through its bony shell. This was at first regarded as a true sarcoma, but the patient is alive and well ten years after operation. Platt considers that, as a primary operation, excision is chiefly applicable in tumours of the upper limb, with the insertion of an autogenous bone graft to make good the loss of bone after it is certain that local recurrence is unlikely. Compared with curettage the operation of excision gives a much higher percentage of cures.

Amputation in the lower limb is inevitable for neglected tumours in the region of the knee where the joint is threatened with invasion, and in cases in which the tumour has recurred after curettage or has defied irradiation. In patients of middle age the economic advantages of amputation are considerable. Platt agrees with Bloodgood that the choice of irradiation as a primary measure in tumours of the long bones is a somewhat hazardous experiment, and valuable time may be lost in waiting for a tumour to heal under irradiation. From the evidence at present available it would appear that the case for primary irradiation, except for tumours affecting the flat bones, is still unproven, and that early operative intervention offers the best hope of permanent cure.

[2] Platt: *Surg., Gynecol. and Obstet.*, February 15th, 1935.

SOCIAL MEDICINE

Since Dr. Etienne Burnet, the medical expert attached to the Health Organization of the League of Nations, presented to us through the *Quarterly Bulletin* of that organization his extraordinarily able report on "Medical Education and the Reform of Medical Studies," his writings have been looked forward to with eagerness by many readers in this country. Those readers will wish their attention to be drawn to an article entitled "Médecine Expérimentale et Médicine Sociale," published a few weeks ago in the *Revue d'Hygiène*.[1] It is the first of a series of lectures on leprosy given by him as substitute professor of medicine at the Collège de France. Leprosy is taken as a type of disease which illustrates in many significant ways the relationship of social conditions to medicine, and the need for developing medicine as an experimental science and an art applied to individual treatment into a social science and an art applied to the community. The theme so stated is now, of course, being more fully appreciated year by year, but Dr. Burnet describes its nature and importance so effectively in his lecture as to make the publication of that lecture of more than ordinary value.

In one of his striking phrases the author says that the object of social medicine may be described as the equalization of classes, rich and poor, in respect to health. It follows that social medicine is not merely biological but economic and psychological. Yet compensation for the inequalities of education, economic status, environmental conditions, is enormously difficult, even when scientific medical knowledge is fairly adequate. This is well illustrated by the mass administration of quinine for malaria. An inquiry by the League of Nations in the year 1931 showed that of 100 millions of sufferers from malaria in British India only eight to ten millions were receiving treatment, and that the quantity of quinine used per person treated per annum was not more than 2 grams, whereas for the protection of a European in a malarial district about 100 grams per annum are needed. Thus the application to a very large population of a method of treatment, apparently simple, encounters almost

[1] *Revue d'Hygiène et de Médecine Préventive*. Tome 57, No. 5, May, 1935. Paris: Masson et Cie, 120, Boulevard Saint-Germain. (10 fr.)

insuperable difficulties ; and these difficulties are not only with regard to the technical preparation and wholesale administration of a medicament, but also with regard to the conditions of life in human society.

Medicine has progressed in two ways: by making and applying scientific discoveries, and by treating larger and larger numbers of persons. Medicine may thus be said to be democratized, yet disease does not disappear. The extinction of endemic and epidemic illness is less a question of individual medicine than of social medicine. The source of illness of this character lies not in the patient himself but in the environment, in nature, society, or habits. One may witness doctors curing more and more persons and yet see the number of persons ill not diminishing but increasing, so that illness, morbidity, lasts for ever. One lops the branches but the tree grows. Thus the maxim of Comte that the general is greater than the particular, the social than the individual, has a very definite meaning for social medicine. The individual may be largely responsible for the preservation of his own health, but how can he properly be held responsible if he has not been taught? The duty of medicine to the individual in the matter of health is not to be an emergency help, but first of all to teach him what he must do, how he must live, in order to keep well ; and then to create social and environmental conditions, from his birth onwards, which will enable him to put into constant application the knowledge he has acquired. This implies, of course, on the other hand, the submission of the individual to the health measures taken by society. There is a mutual contract involving reciprocal rights and duties. On this the public health rests: it is the social medical contract. Medicine can do little or nothing without the human will ; but society ought to create by education a general will towards public health.

Such, broadly, is Dr. Etienne Burnet's conception of the meaning and role of social medicine, and it is set forth, expounded, and illustrated in a fascinating way in his lecture as recently published. There can be but little doubt that much of the future of medicine will lie along the path of development thus indicated ; and that, however wide and rapid may still be the progress of medicine as a science, and however great may be the increase in technical skill of medicine as an art, the human *contact* of individual medicine and the social *contract* of public medicine must continue to be essential elements of increasing importance in its application to human needs.

THE PHYSIQUE OF MAN IN INDUSTRY

Eight years ago the Industrial Health Research Board issued a report on " The Physique of Women," and the Board decided to carry through a similar but more extensive investigation on men. The results of this investigation have now been published as Report No. 71 on " The Physique of Man in Industry."[1] The work was directed by Professor E. P. Cathcart, the chairman of the Board, the actual measurements being made by Mr. D. E. R. Hughes and Mr. J. G. Chalmers. No fewer than 13,656 individuals were tested, the great majority of them being employed industrial workers, but they included a sample of 1,328 unemployed men, and one of 1,735 university students. The employed men were drawn from all the principal industrial areas and from many industries, 149 firms being visited in all. The material was therefore much larger than that obtained in any previous anthropometric investigation in this country. In addition to the measurement of weight and height, the subjects were tested in respect of their strength of lumbar pull by means of a dynamometer, their strength of hand grip, and the distance of their third finger-tip from the ground when standing to " attention." The results are reproduced in a series of graphs and tables, which should serve as a valuable standard in future investigations. The employed males ranged in age from 14 to over 65, and it was found that they reached their maximum height at the age of 22 years, and then gradually fell away with advancing age to the extent of two inches. Their strength of pull increased to a maximum at the age of 27, and then slowly declined. London men were distinctly above the average in respect of height and weight, while the men of Leeds, Sheffield, and Glasgow were below it ; but geographical comparisons are apt to lead to erroneous conclusions if the samples compared are not occupationally equivalent. For instance, the " black-coated " group of clerks, etc., were found to be one to two inches taller than the transport, metal, and chemical workers in each of the five towns where they were tested, but their strength of pull was 11 to 25 kg. inferior. Within the manual groups the differences were less pronounced, but the textile workers in Leeds, as might be expected, showed a physique somewhat inferior to that of the men engaged in mining and quarrying. On the other hand, the Glasgow men employed in the food and tobacco trades compared favourably with those in transport and metal works. In explanation, it is suggested that to-day, when so many mechanical methods are available in industry, intelligence counts for more than brute force. The men wanted must be agile mentally and physically. No reliable index of physical fitness has yet been evolved, but it was found that when the total strength (sum of grip and pull in kilograms) was divided by body weight (in kilograms) a fairly uniform result was obtained in all except the very early and late age groups. Comparable age groups gave a value of 3.64 for employed, 3.38 for unemployed, and 3.45 for students, and the data further suggested that employed men engaged in moderate work were superior to those engaged in heavy occupations.

[1] Medical Research Council. Report No. 71. London: H.M. Stationery Office. 1935. (1s. 3d. net.)

IODINE

The appearance of Mr. C. O. Harvey's report to the Medical Research Council on the determination of iodine in biological substances[1] is most timely, for there can be few subjects in the whole range of medical science concerning which so much confusion has arisen,

[1] The Determination of Iodine in Biological Substances. By C. O. Harvey. Medical Research Council. Special Report Series, No. 201. H.M. Stationery Office. 1935. (1s.)

consequent on the imperfections of existing methods of iodine assay. As is well known "the element iodine plays a very important part in the metabolism of the body, and particularly in relation to the functions of the thyroid gland. The quantities involved are nevertheless exceedingly minute," and it is a matter of the first importance that an accurate method of estimating these minute quantities should not only be evolved but generally adopted by those engaged in research in this field. Mr. Harvey's improved and standardized method has been submitted to practical trial by two independent analysts—Miss M. G. Crabtree, working for the Medical Research Council at the Lister Institute Laboratories at Elstree, and Miss G. Mason, at the Rowett Research Institute, Aberdeen—using parts of the same specimen. They have found that it yields "consistent results." Mr. Harvey's success in solving a difficulty which has in the past eluded satisfactory solution will do much to illuminate many dark places in connexion with the role of iodine in the animal organism. We note also with satisfaction that "promotion of further work on iodine in relation to the nutrition and health of man and animals, in which Mr. Harvey's method is likely to prove useful, has been entrusted to a new committee on iodine deficiency and thyroid disease, appointed jointly by the Medical Research Council and the Agricultural Research Council." The committee has a difficult task before it—a task worthy of the primordial importance of the element with which it will have to deal.

INSTRUCTION IN MILK PROCESSING AND CONTROL

The increasing importance of the milk industry in this country has led the City and Guilds of London Institute to draw up a syllabus of instruction for those wishing to hold responsible positions in milk-processing plants. Courses will, if the demand is sufficient, be held in different parts of the country, and candidates will be required to pass both an intermediate and a final examination before being awarded a full technological certificate of proficiency. The course for each examination will normally last two years, attendance being required twice a week, for two and a half hours each time, during the usual school sessions. The subjects for the intermediate examination are chemistry, physics, and microbiology. Those for the final examination, which incidentally is taken in two parts, are milk processing, and the manufacture of milk products, excluding butter and cheese, together with the chemical and bacteriological control of milk and milk products. Copies of the syllabus may be obtained from the Superintendent, Department of Technology, City and Guilds of London Institute, 31, Brechin Place, South Kensington, S.W.7. Candidates inquiring where courses will be held should apply to the education offices of the nearest local government authority for information. Examinations can be taken at any technical institute or other centre in Great Britain or Ireland at which the local education authority accepts responsibility for their conduct. Any steps calculated to improve the standard of milk and milk products destined for human consumption are welcomed by the medical profession, and it is much to be hoped that the present attempt to increase the technological control of processing plants will prove successful. Study of the syllabus leaves us, however, in some doubt whether adequate attention has been paid to the risks of contamination of milk with pathogenic organisms of human origin before entry and during passage through the plant. Knowledge of the various means by which these organisms may gain access to milk—in particular pasteurized milk and ice-cream—and of the measures that may be taken to prevent contamination of this type is essential to any plant operative anxious to exercise an intelligent control over the safety of the products under his care. We hope that this part of the training, which is so important to public health welfare, will not be neglected.

PNEUMONIA PROPHYLAXIS ON THE WITWATERSRAND

The South African Institute for Medical Research has issued a report[1] on the epidemiology of pneumonia on the Witwatersrand goldfields, and on the prevention of this disease and other allied acute respiratory diseases in native labourers by means of vaccines. A change seems to have occurred in the epidemiology of pneumonia since about 1926, when the old-time classical pneumococcus lobar pneumonia was largely displaced by a pneumonia associated with respiratory pyogenic micro-organisms in addition to or in the absence of the pneumococcus. It is suggested that most of the present outbreaks of pneumonia among native mine workers are fundamentally of virus origin, with a superimposed secondary infection leading to pulmonary complications. The lack of correspondence of the bacteria in the previously used vaccines with the organisms now being recovered from most cases of pneumonia is believed to explain the lessened efficacy of vaccine treatment in recent years. Despite insistence on hygienic measures and the improvement of environmental conditions, there appears to be a residuum of cases of pneumonia due to an inherent low resistance of certain individuals to respiratory infections. It is largely to restore the immunity response in such persons, and to reinforce it in others, that vaccine prophylactic measures are being pressed. The use of a mixed vaccine in prophylaxis is suggested for present-day pneumonia on the Witwatersrand, and justification for its trial is traced in previous work relating to the prevention of pulmonary complications in influenza and other allied acute infections of virus origin. The present series of reports by the director, Sir Spencer Lister, and his colleagues also evaluates on immunological lines the pneumococcus vaccine and the pneumococcus element of a mixed vaccine in so far as the natives of the Witwatersrand are concerned, and the significance of the appearance of new pneumococcus strains is discussed. The practical aspects of pneumonia vaccine prophylaxis are described, including the preliminary bacterial survey of a community to be immunized with "community autogenous" vaccine; an account is given of the constitution, dosage, and mode of inoculation and preparation of this vaccine. The principles in estimating the value of the mixed vaccine are considered, and a study is reported of the mortality in an uninoculated mining community and in a comparable community which used the mixed vaccine as a prophylaxis.

[1] Publication of the South African Institute for Medical Research, vol. vii, No. 37, 1935. P.O. Box 1038, Johannesburg.

"PEROPERATIVE" HISTOLOGICAL DIAGNOSIS

The new adjective in this title is coined somewhat apologetically by Huguenin, Welti, and Placa[1] in order to describe a procedure which they advocate in the surgical treatment of thyroid tumours. Enlargement with induration of the thyroid gland may or may not be due to malignant disease, and clinical examination is incapable of deciding whether malignancy exists, and in consequence whether extirpation should be partial or total. It is therefore suggested that not one but, if necessary, a series of frozen sections should be cut during the operation in order that its scope and aim may be decided then and there without doubt as to the condition with which the surgeon is faced. Seven cases are described in detail in which this procedure was followed. In one of these only were the histological appearances so doubtful as to afford no help. Four cases were proved to be malignant ; one of these had the aspect of Riedel's thyroiditis, and was only found to include a malignant area after several sections had been cut from different parts. In this and two other cases the effect of histological diagnosis was to determine the abandonment of any attempt at radical surgical measures, but in the fourth case total excision was possible. Of the two non-malignant enlargements of the thyroid, one was an adenoma and the other a suspected cancer which proved histologically to be due to chronic inflammation. The value of immediate sections is a matter upon which opinion is by no means agreed, and they are employed less often than perhaps they might be in operations on other parts of the body. In deciding the merits either of the ordinary frozen section or of newer methods in which crushed tissue is studied without sectioning, much must obviously depend on the competence of the histologist: this is peculiarly a type of work in which experience such as few possess is necessary for producing trustworthy and sufficiently rapid results.

HORMONES AND ORGANIZERS

Professor Julian S. Huxley devoted a lecture[2] given to the Junior Scientific Club, Oxford University, to some of the later discoveries in the ever-expanding field of experimental embryology. As our readers already know, hormone-like substances take part in the differentiation of tissues. The classical example is the substance or organizer contained in the anterior lip of the blastopore. An "organizer" differs from a hormone in requiring direct contact with the host tissue to produce an effect. The anterior lip organizer can induce host tissues to assume the form and structure of an embryo. Professor Huxley laid stress on the fact that organizers are not confined to the early stages of development. If the substance of the degenerating tail of a tadpole is grafted in the animal's back, the skin over the graft will be absorbed. The main fact he brought before his audience, however, related to what he named "biological fields"—having in mind biological fields of growth which are under the control of a growth gradient. This new idea can be best explained by a concrete instance. If the cut end of the nerve of a developing newt is so placed that it is in direct contact with the overlying skin, growth occurs in the skin touching the ends of the cut nerve. The type of growth which results depends on the potentialities of the area stimulated. If the nerve is diverted into the skin area from which the hind limb will bud out, then a foot is produced ; but if at the site of the tail bud, then a tail arises. An organizer, if a crude simile may be used, corresponds to the finger which pulls the trigger of a gun: if the embryonic tissues are not "loaded" by certain postulated qualities, nothing happens. After all, it is the qualities resident in embryonic tissues which matter most.

A READING FROM ANDREAS VESALIUS

The eighth volume of the *Proceedings of the Charaka Club*[1] contains an interesting and well-written article by Dr. Samuel W. Lambert. He translates pp. 818–824 of the nineteenth chapter of the last book of the 1555 edition of Vesalius's great treatise on anatomy. Facsimiles of the pages and illustrations are given, and the essay is profusely illustrated. Dr. Lambert asks pertinently enough why the Anatomy of Vesalius has never been translated. It might have been done by Philemon Holland had it attracted his attention, but it would not have appealed even to that prince of translators, for it is strictly technical, and (unlike Pliny) would not have been bought by many. Anatomists during the Elizabethan period read Latin fluently, and the expense of production with such numerous woodcuts would have been prohibitive. Dr. Lambert discusses the Geminus reproductions of the Vesalian Plates in the light of the recent work on the subject done by Dr. Sanford V. Larkey. He points out that Vesalius was not sparing in his epithets when he was roused to defend his anatomical discoveries. Realdus Columbus he calls "an uneducated being," a "half-wit," and "a boaster that had discovered a vein overlooked by me in an unfinished dissection." The gradual development of knowledge about the pulmonary circulation is traced, and Dr. Lambert translates the passage from Servetus where it is fully described and is used, too, as a physical explanation of the formation of the "spirits" of the body from which the Holy Ghost is established in the body of man. It may be noted that as early as 1556 Charles V referred the question of the dissection of the dead to the theological faculty of Salamanca, who decided that "such dissection is indispensable in the opinion of physicians for the increase of knowledge of the healing art, and must therefore be considered as necessary." Dr. Lambert believes, therefore, that the ill-starred pilgrimage which Vesalius made to the Holy Land eight years later was not due to any anatomical lapse, but was inspired by a desire to obtain a release from his duties as court physician, and in that way to secure freedom from the priest-ridden surroundings in which he found himself entangled.

The Library of the British Medical Association will be closed for three weeks from Saturday, August 10th, for the purpose of redecoration and repair.

[1] *Bull. de l'Assoc. Franç. pour l'Étude du Cancer*, 1935, xxiv, 93.
[2] *Problems in Experimental Embryology*. London: H. Milford, Oxford University Press. (1s. net.)

[1] *The Proceedings of the Charaka Club. Vol. VIII.* New York: Columbia University Press ; London: H. Milford, Oxford University Press. (25s. net.)

MATERNAL MORBIDITY AND MORTALITY

A SCOTTISH REPORT

The report on maternal morbidity and mortality in Scotland which has recently appeared[1] is the outcome of an inquiry instituted in October, 1929, when the Scottish Department of Health decided to call for a report upon all deaths occurring during pregnancy, parturition, and the first four weeks of the puerperium. The total number of deaths thus investigated was 2,527, but the scope of the survey was greatly widened by an attempt to estimate the prevalence and the nature of the "various sicknesses as opposed to mortality" from which pregnant women suffer. A report was therefore called for in regard to all pregnant women who gave birth during the semester ending June, 1932. In response 39,205 schedules were voluntarily returned, and the labour which their examination entailed must have reached almost astronomical proportions. The special attention which has been given in this report to sickness as opposed to mortality justifies the variation from previous reports in title—morbidity taking precedence of mortality.

Probably no greater effort has been made or will ever be made in the study of clinical data in the mass; admiration for the patient industry of the authors, Dr. Charlotte Douglas and Dr. Peter McKinlay, will be universally accorded, though doubt may arise whether the results achieved constitute an adequate return for so great an expenditure of labour. The report itself directs a warning finger at the weak spot in the system of massed returns from numerous scattered observers when it points out that "a large measure of dubiety [exists] in many cases," since much of the information asked for was not given, and the time and care bestowed upon the schedules by different collaborators varied greatly (p. 69). The elaborate care with which the authors of the report have scrutinized the returns and examined them from every angle carries the conviction that nothing better than this can be done with material obtained in the manner described: the orange has been squeezed dry. If further inquiries into the general problems of maternal mortality and morbidity are to be undertaken it would probably be wiser to direct them into other channels.

The report proper is short, occupying only twenty-eight pages out of a total of 218, the remainder being devoted to appendices. This arrangement enables the authors to present the results of their general survey of the problem, together with the conclusions and recommendations at which they arrive, in conveniently compact and prominent form; the analysis upon which the conclusions are based is given in detail in the appendices, which are closely packed with information, much of it recondite in character, and well calculated to serve as the basis of further particular inquiries.

The "general trend of maternal mortality" is dealt with in an appendix of thirty pages—full of interest no doubt to the statistically minded, but rather difficult for the general reader to follow. Much interesting information can be gleaned about such matters as the effect exerted by the decline in the birth rate upon the rates of maternal mortality, the influence of age and parity, and of the age at marriage. The seasonal variations, which occur fairly regularly in maternal mortality, and particularly in the rate of mortality from sepsis, are described and their causes discussed. The data are illustrated by numerous tables and graphs, one of the latter being economically utilized to display the course of nine different conditions over a period of twenty years.

[1] Report on Maternal Morbidity and Mortality in Scotland. By Charlotte G. Douglas, M.D., D.P.H., M.C.O.G., and Peter L. McKinlay, M.D., D.P.H. Edinburgh: H.M. Stationery Office. (3s. 6d.)

Aetiological Factors

Another appendix is devoted to a discussion of the aetiology, both of maternal morbidity and of maternal mortality. In this section will be found the results of the analysis of the 39,205 schedules referred to above. A practical suggestion arising out of this part of the inquiry is that "poor health" during pregnancy is a factor of considerable importance in the causation of maternal mortality, and deserves much more attention than it has hitherto received. The further suggestion is tentatively advanced that during pregnancy there is a definite decline in the incidence of "good health," but it is admitted that the evidence in support of it may well be questioned. Generally speaking, the results of this inquiry into the occurrence of sickness during pregnancy are regarded with some suspicion by the authors, who point out that some of the conclusions which emerge are at total variance with experience. As an instance they quote the returns as showing that perineal lacerations had occurred in only 0.1 per cent. of previous pregnancies.

It was found that the death rate from sepsis was definitely higher in young women (under 25) than in older women, the proportion of deaths due to sepsis being 41.4 per cent. in the former and only 29.3 per cent. in the latter. From a general survey of the distribution of maternal mortality the interesting point is made that while the three Border counties have the highest general rates, their mortality rate from sepsis is 25 per cent. below the average for the whole of Scotland. The midland industrial belt shows a wide variation between the east central region, where the mortality rate is 8 per cent. below the average, and the west central region, where the mortality rate is 5 per cent. above the average. Over the whole country the rate for sepsis in urban districts is 21 per cent. above the average.

Responsibility for "Avoidable Deaths"

As in the case of previous reports, a careful attempt has been made to pick out the deaths which should be regarded as "avoidable," and it is claimed that no death was so classified if there was reasonable room for doubt. The formula of the "primary avoidable factor" introduced and recommended by the English Departmental Committee was not employed. In the result 60 per cent. of all deaths classified as directly attributable to childbearing were regarded as avoidable, a proportion considerably higher than that found in the English inquiry (46 per cent.). The responsibility for avoidable deaths is attributed to negligence on the part of the patient in, roughly, one-third, and to faulty attendance on the part of doctor, midwife, or institution in two-thirds of the cases. The investigators would no doubt agree that the allocation of blame in these cases is no simple matter, and calls for great circumspection. Can it fairly be said, for example, that a woman is responsible for her own death because, being ignorant of their importance, she failed to make use of the facilities for ante-natal supervision provided for her? Or if a doctor or a midwife, conscientiously acting according to the best of their admittedly imperfect knowledge, commits an error of judgement which leads to disaster, can the responsibility for death be fairly placed upon their shoulders? Such a position would certainly not be taken in respect of surgical operations. Personal responsibility is not alleged in the report, but such figures as are given may be misunderstood by the public and unfairly quoted in wholesale condemnation of medical practice. The authors probably realize this, for they say in a different connexion (p. 68) that the proportion of "avoidable" deaths must not be regarded as indicating the level to which the maternal death rate can be brought in practice. It is to be hoped that this cautionary state-

ment will not be overlooked by the lay reader, for it is necessary to an understanding of what is meant by "avoidability."

Influence of Ante-natal Care

The section dealing with the results of ante-natal care will be read with interest in view of the fact, which has become the subject of much comment, that so little effect has been produced upon the maternal mortality rate by the wide extension of ante-natal supervision that has been brought about in recent years. In this report more than 28 per cent. of the maternal deaths are attributed to lack of adequate ante-natal care. The standard of adequacy adopted by the investigators is not stated, and perhaps it is not capable of definite statement. The number of examinations by doctor or midwife, and the number of attendances at the clinic, is possibly the only practicable criterion, but the quality of the supervision given is of at least equal importance with the amount, and quality can only be judged by results. It is therefore interesting to note that out of 504 cases in which ante-natal care was given by an institution it was regarded as inadequate in ninety-four—that is, in about 18 per cent. (Table 3, p. 17). Whether the inadequacy, in these cases, consisted in the giving of bad advice, or in failing to carry out routine measures of supervision, is not stated. The report, however, makes it clear that in Scotland, as elsewhere, ante-natal supervision has not reached the level of efficiency which it may fairly be expected to attain.

To faulty intra-natal management 559 deaths are attributed, making 22.67 per cent. of the total. The view is taken that in the majority of these fatalities, whether occurring in institutional or in private practice, "an undue desire to hurry the confinement was at the root of most of the troubles." The report further makes a strong point of the "extreme gravity" of hurrying the third stage (p. 21). It is also deplored that "major obstetrical deliveries were attempted in unsuitable surroundings, with inadequate equipment, and very often with inadequate anaesthesia." In this connexion emphasis is laid upon the point that one of the chief functions of ante-natal supervision should be "the selection of cases suitable for delivery at home." All this is unfortunately an oft-told tale, and serves sadly to confirm the conclusions arrived at in previous reports.

Analysis of Causes of Maternal Mortality

The most interesting section, as well as the longest, is that in which the detailed analysis of the causes of maternal mortality is set out and discussed. Twenty-seven different causes of death are passed in review, and the clinical data furnished by the returns are tabulated and minutely examined. This section is a model of careful and exhaustive investigation. It is not possible in this survey to do more than select a few of the many interesting points which emerge.

There were 154 deaths from *abortion*: 90 per cent. of these occurred in urban districts, and the cause of death in 90 per cent. was sepsis. Attention has previously been called to the fact that *hyperemesis* is a more frequent cause of death in Scotland than in England and Wales. In the report the proportion of the total mortality due to this cause was 4.5 per cent., while in England and Wales during the same period it was only 1.3 per cent. It is further pointed out that in Scotland the proportion of deaths from this cause is rising: in the decennium 1911-20 the proportion was 2.31 per cent. of the total; in the succeeding decennium, 1921-30, it rose to 3.99 per cent. A useful piece of constructive work might be done by an expert inquiry into the causes of this striking difference between the two countries in respect of the frequency of occurrence of hyperemesis and its tendency to terminate fatally.

There were 145 deaths from *eclampsia*, and of these forty-five—that is, nearly one-third—died undelivered; this is one of the saddest statements in the report, for it suggests that there is a considerable lack of co-operation in Scotland between the different elements of the maternity service.

There were 108 deaths from "failed forceps"—a name characterized in the report as "a convenient term of obstetrical jargon"; of these deaths sixty-two were due to shock and the remainder (forty-six) to sepsis. Fatalities which arise in this manner are a deep reproach to obstetric practice. *Shock* following spontaneous delivery was the cause of death in thirty-seven cases; of these seven were cases of acute inversion, while eight followed rupture of the uterus. Four were cases of the high forceps operation carried out in the patient's home by a doctor who gave the anaesthetic himself. The authors are inclined to attribute the occurrence of shock in uncomplicated labour in some part to ill-health during pregnancy; there were twenty-two deaths in the series which were brought about in this manner.

The section dealing with deaths from *sepsis* deserves special attention; the cases are dealt with in groups and are exhaustively considered from the clinical standpoint. After *non-instrumental delivery* there were 313 cases, after instrumental or manipulative delivery 219 cases, and after Caesarean section nineteen cases. The only suggestion the report makes in regard to the causation of the cases which occurred after non-instrumental delivery is that the third stage was hurried in a considerable proportion. The negative fact is emphasized that so far as was known none of the persons in attendance "had been in contact with infection or had any septic focus" (p. 177). It is evident that an inquiry on different lines will be necessary to elucidate the causation of these disturbing cases.

The authors found reason to believe that deaths occurring from *sepsis after instrumental delivery* showed a tendency to "increase as social conditions improved." If this view is correct the position becomes still more disturbing. In seventy-five out of the 219 deaths in this group the operation is regarded as having been unnecessary; it was undertaken either "for delay" or "at the request of the patient."

Some Constructive Proposals

It will be now evident that the story which the report has to tell is one of almost unmitigated gloom, and the feeling of depression produced in the mind of the reader is not greatly alleviated when he turns to the very short chapter of conclusions and recommendations for improvement, which occupies only five pages. Definite schemes are not to be looked for in a report of this character, but the few constructive proposals which are made, though useful, touch only the fringes of the subject.

The first recommendation is almost a truism—namely, that pregnancy should be "supervised as a unity"; supervision should be begun early and continued throughout; this supervision should be in the hands of one medical attendant. Unfortunately no hint is forthcoming of the great administrative difficulties to be overcome in carrying out this recommendation. "Continuous supervision," the report continues, should include three "special examinations" by a medical practitioner, and details are given of the manner in which the special examinations should be carried out. Local authorities are asked to "consider" a scheme of voluntary notification of pregnancy.

It is strongly recommended that, except in the case of "minor interference," the advice of an obstetric specialist should be obtained before operations are undertaken, although it is admitted that in rural areas this may not be practicable. An important practical recommendation is that in cases of emergency the midwife should be allowed "direct access to the staff and services of the nearest hospital equipped to deal with such conditions." Those who are familiar with the conditions under which midwives practise know that much delay would often be spared if this recommendation were carried out.

In regard to maternity institutions it is urged that they should be of sufficient size to justify the appointment of a resident medical officer specially trained in obstetrics. It is regarded as essential that maternity nursing should be undertaken only by midwives, and the establishment of a

"local authority midwives service" is recommended as being in the best interests alike of patients and of midwives. In these two last-named particulars the report is in agreement with the proposals of the Joint Council of Midwifery, which were summarized in these columns on February 23rd, 1935 (p. 371).

Miscellanea

A final word should be said as to the form and style of the report. It can have been no easy task to present to the reader a clear summary of the facts which can be gleaned from the enormous mass of information collected. On the whole, the authors have admirably overcome their difficulties, but a freer use of paragraph headings would have been welcome. The important chapter on sepsis after instrumental delivery is difficult to follow, because the cases are arranged in several series (referred to indifferently as "groups" and "subgroups") without any clear indication of the transition from one series to another. Cross-headings would have been of great assistance to the reader here.

There is, further, in many places, a certain lack of precision both in statement and in the use of terms: thus "spontaneous labour" sometimes means "spontaneous delivery"; in discussing cases of "high forceps" it is stated that "the heads were unfixed when the instruments were applied." Presumably this means that in each case the head was not engaged, but in obstetric parlance the difference between "fixation" and "engagement" is fundamental.

It was a real surprise to find that a certain confusion exists north of the Tweed with regard to the name of one of Scotland's famous obstetricians. He is correctly named in a footnote (p. 35) as Matthews Duncan, but in the text he becomes Duncan Matthews! Can it be that Scotland is forgetting the names of her honoured dead?

MENTAL HYGIENE CONFERENCE IN BRUSSELS

The third European Reunion of Mental Hygiene was held in Brussels at the close of last month, delegates being present from Australia, Canada, the United States, France, Finland, Holland, Italy, Switzerland, Esthonia, Belgium, and Great Britain. Three main topics were discussed.

The Boarding-out System

The subject of boarding out mental patients in other families was introduced by Professor G. Corbieri of Milan, who said that this was practised at Arezzo, Florence, Lucca, Treviso, and Trieste, the foster families for the most part being peasants residing near a mental hospital and being supervised by a medical practitioner. He thought this plan worthy of extension in other countries. Dr. Sano, medical director of the Gheel colony, said that this boarding out of the insane, epileptic, and the mentally defective had been practised at Gheel since the sixth century. There was a small central hospital to which patients could be sent, if necessary. Dr. J. Vié described the conditions at Ainay-le-Château in France, and said that this boarding-out plan was a form of social psychotherapy, from which much might be expected in suitable cases. One of the fundamental indications for it was the need of providing for cases of chronic mental illness or defect which would otherwise be completely isolated from society. Sir Laurence Brock, chairman of the Board of Control, said that the plan was being tried in Great Britain, but there had been difficulty in finding suitable homes except in rural areas such as Suffolk and Wiltshire. One problem was the keeping of the male patients out of public-houses. He doubted whether the boarding out would effect any appreciable financial economy, but restoration to health might well be accelerated in recoverable cases.

Punishment and Upbringing

Sir Hubert Bond, senior commissioner of the Board of Control, took the chair at the discussion on the psychological value and dangers of punishments and restrictions in the upbringing of the child. Dr. Meng of Basle, who opened, approached the question from the psychoanalytical standpoint, basing the use of punishments and restrictions on the fundamental desire for the control of others which existed in every human being. All such restraints should aim at bringing the aggressive tendencies of the child under the control of a strong personality. Psycho-analysis had brought to light the emotional interactions between parents and children. All educational methods should be examined from the point of view of their present and future effectiveness in controlling the aggressive and sexual instincts of the child, so that he might become truly developed and balanced, be freed from the desire to dominate others, be capable of steady work and controlled affection, and be able to subordinate his own desires and wishes to the interests of his fellows. Dr. H. Crichton-Miller stressed the importance of the family and the school as the essential agents of social adaptation. Education should make the individual fully conscious of himself, and a social being. The basic duty of the adult was to adapt the child to life with a minimum of suffering, on a basis of establishing emotional conditioned reflexes. The stress on the vengeance aspect of punishment was, he thought, a characteristic error of the Freudian school of thought. In the process of adaptation to life it was desirable that the child should be surrounded by controlling forces, which in their impersonality and inexorability should appear to him to approach closely to the laws of nature. The adult who was using his desire for power tended to be arbitrary and autocratic, and therefore to destroy the child's sense of emotional security; even the bitter resentment which an over-strict regime would provoke was less damaging than such a feeling of insecurity. The ideal formula for the child should be: "I shall do this in order that I may become a man and independent; if I do not do this I shall suffer from the opposition of society." Punishments and restrictions, though valuable in the early stages of education, could not in themselves produce that positive state of mind which should be the aim of all education. Dr. Doris Odlum agreed that nothing was worse for a child than to feel insecure about the emotional attitude of the adults around it. Children were emotional barometers as regards the adults in their environment. Dr. Forel of Geneva supported the view that a discipline founded on the desire to render the child an independent personality was the ideal of all education. The extent to which punishment was used must depend upon the individual child and the parent or teacher. The method was of less importance than the spirit which actuated it.

Mental Hygiene and the Press

Opening a discussion on mental hygiene and the Press, Dr. Forel stressed the influence of the Press upon the psychology of the people, and also emphasized the value of financial and other independence. He was strongly opposed to publication of reports of suicides, to advertisements of quacks, abortionists, and unauthorized patent drugs, and to accounts of unsavoury law cases. It would be most beneficial if a newspaper could have on its staff a critic who was competent to assess the mental hygiene values of the news to be published. Dr. van der Spek of Holland commented on the suggestibility of the public, which rendered the Press one of the greatest forces in the world for good or ill. It was unquestionable that much remained to be done to combat these evil forces which were inimical to the mental welfare of the people.

At the conclusion of the conference Sir Laurence Brock and Dr. Doris Odlum, on behalf of the National Council of Mental Hygiene for Great Britain, extended an invitation for the fourth European reunion, to be held in London in July, 1937.

USE OF GAS HEATERS IN FLUELESS ROOMS

INTERIM REPORT OF MEDICAL ADVISORY COMMITTEE

The modern practice of building dwelling rooms without flues is a matter of concern to the medical profession, not only because doubts have been expressed as to the hygienic sufficiency of the ventilation of such rooms, but also because the warming of them by flueless gas heaters has been regarded with some suspicion.

As a result of a request from the Governor of the Gas Light and Coke Company for advice and assistance on this matter, the Royal College of Physicians approved the formation of a Medical Advisory Committee, on the nomination of its President, to examine available information, to initiate such research as may be thought necessary, and to make recommendations. This committee was constituted as follows: Sir Joseph Barcroft, F.R.S., Professor of Physiology, University of Cambridge; Dr. Guy P. Crowden, M.Sc., Reader in Industrial Physiology, University of London, London School of Hygiene and Tropical Medicine; Sir Arthur J. Hall, F.R.C.P., Emeritus Professor of Medicine, University of Sheffield; Dr. Reginald Hilton, F.R.C.P., Assistant Physician, St. Thomas's Hospital; and, as chairman, Professor W. W. Jameson, F.R.C.P., Professor of Public Health, University of London, Dean of the London School of Hygiene and Tropical Medicine.

The committee has held several meetings and has examined a large amount of published and unpublished information, as a result of which it feels that, whilst more work requires to be done in certain directions, a short note giving the results of some of its inquiries may be of service at the present time, and, pending the preparation and publication of a full report, it agrees to the following summary of its interim conclusions. It should be noted that these conclusions refer only to conditions likely to be found in living rooms and bedrooms, and are not necessarily in any way applicable to those met with in factories and workshops.

Ventilation

In a room unprovided with a flue the ventilation depends so much upon uncertain factors, such as the strength and direction of the wind, that it is difficult to generalize on the degree of ventilation which is normally obtained. Doors and windows are often kept closed, and air bricks, if present, rendered ineffective, especially in the absence of any obvious provision for the (economical) warming of such rooms. It has usually been assumed that, in ordinary flueless rooms without an air brick, and with doors and windows shut, an air change of at least 1/2 per hour is obtained, mostly through chinks round the door and window frames. Reliable evidence on the subject is limited, but the committee is inclined to believe that this figure is an underestimate, and that at least in small rooms not exceeding 1,000 cubic feet capacity the air change will rarely be below 1 per hour. Quite apart from heating, and whatever the heating medium, it is, however, open to grave doubt whether an air change of 1 per hour in an occupied room is high enough to ensure healthy and comfortable conditions. Because of the existing uncertainties the committee hopes to arrange for the carrying out of additional experimental work of a practical character on this problem.

Heat Requirements

The less the degree of ventilation the less will be the quantity of heat necessary in cold weather to maintain a comfortable temperature. With flueless gas heaters all the sensible heat from the burning gas passes into the room, either as radiant or as converted heat. It appears that for average conditions an allowance of about 1 cubic foot of gas (500 thermal units) per 100 cubic feet of room capacity would be sufficient to maintain comfort if the gas heater were in continuous operation. In practice such heaters are more often used intermittently, and for the rapid warming-up of a cold room a more powerful heater is therefore desirable. If such a heater is used for a prolonged period of time at the full gas rate the room would almost certainly become overheated, with the result that then the occupants would probably either turn down the gas or open the windows. For practical purposes it may therefore be desirable to suggest a maximum gas rate for flueless gas heaters of 1 cubic foot per hour per 50 cubic feet of room space, which will allow rapid heating-up of the room and will fix a limit to the degree of overheating which is possible.

Products of Combustion

Although the composition of towns' gas may vary considerably in different areas of supply, the products of combustion always consist almost entirely of water vapour and carbon dioxide. (There are also minute traces of sulphur oxides, nitrogen oxides, and carbon monoxide, which are referred to later in this summary.)

Water Vapour.—About 1 cubic foot of water vapour is produced from each cubic foot of gas burnt. The effect on the air of the room will be to increase its humidity, a result which may often be hygienically beneficial.

Carbon Dioxide.—About 0.5 cubic foot of carbon dioxide is produced from each cubic foot of gas burnt. A good deal of misunderstanding still exists in the public mind with regard to the supposed harmful effects of carbon dioxide. This is probably owing to the fact that its concentration has for long been used as the gauge of the vitiation of air in dwellings. It is certainly a useful index of the dilution of room air with fresh air—that is, the air change in rooms—but actually there is no evidence that concentrations of carbon dioxide much greater than those encountered in overcrowded rooms have any deleterious effects. Furthermore, it may be pertinent to point out that as much as 5 or even 7 per cent. of carbon monoxide is commonly used as an inhalation for the resuscitation of cases of asphyxia. The concentration of carbon dioxide in the air of a room due to the combustion of coal gas in a flueless gas heater operated at the gas rates suggested is calculated to be below 1 per cent., even when a certain degree of overheating is being experienced.

It may be concluded, therefore, that hygienic conditions will not be adversely affected by these two main products of combustion—namely, water vapour and carbon dioxide—in flueless gas heaters.

Nitrogen and Sulphur Oxides.—When undesirable overheating is caused by flueless gas heaters physical discomfort may be accompanied by a pungent smell or irritation of the throat due to traces of oxides of nitrogen and sulphur which are produced by the burning gas. Nitrogen oxides are produced to the extent of about 5 cubic feet per 10,000 cubic feet of gas burned, of which less than half a foot will be nitrogen peroxide—the only one of the nitrogen oxides of physiological significance at low concentrations. Even when overheating is taking place this oxide will be present in the room air at far below its limit of perceptibility, and there is no evidence that any concentration which is likely to be reached under the practical conditions suggested would be physiologically harmful. Of the sulphur oxides both the trioxide and the dioxide are present in the products of combustion of coal gas, the proportion, varying according to circumstances, rarely exceeding 1 of trioxide to 4 of dioxide, while the total amount depends upon the sulphur content of the gas burned and the degree of absorption of the oxides by the walls, etc., of the room. Sulphur dioxide is just perceptible in the air at a concentration of 2 parts per million, while the mixed oxides may be perceptible at half this concentration, owing to the greater perceptibility of the trioxide. While there is some evidence that prolonged exposure to 10 parts per million of sulphur dioxide may produce nasopharyngitis and interference with smell and taste, it is also on record that air containing up to 40 parts per million can be breathed for six hours without injury. Even when the higher toxicity of sulphur trioxide is taken into account it is clear that the room will be overheated and the air will acquire a perceptible smell before it has become sufficiently contaminated to be harmful. The presence of the pungent smell in association with overheating conditions cannot, however, be accepted as desirable from the point of view of comfort or health.

Carbon Monoxide.—This gas has no smell, and, owing to its power of combining with haemoglobin, is dangerous. It is incorrect to suppose that it is normally present in harmful quantities in the products of combustion. The committee has examined a large amount of experimental and statistical evidence, which shows that any fears of carbon monoxide poisoning from flueless gas heaters as normally used are without foundation. There must be some serious defect in the appliance or in its installation for carbon monoxide to be produced in harmful amounts. The production of carbon monoxide from normal flueless gas heaters is less than 1 cubic foot per 1,000 cubic feet of gas burned, which under conditions of overheating might lead to a concentration in the room air of 10 parts per million, or one-tenth of that which is the safe limit for industrial workers under conditions of continuous exposure.

Summary

The committee has examined all the available evidence on the ventilation of flueless rooms and the warming of them by flueless heaters. Since the air change in such rooms may be as small as 1 per hour, it is open to serious doubt whether a degree of ventilation of this low order can be regarded as satisfactory whatever the nature of the heating, and whether this modern tendency in housing construction is, from the point of view of health and comfort, in the best interests of the community. More information is needed on this subject.

Any form of heating in small unventilated rooms which tends to lead to accumulations of hot stagnant air is objectionable. In this respect flueless gas heaters are no better and no worse than alternative appliances. Any risk to health from the inhalation of products of combustion from flueless gas heaters is discounted by the fact that, even with an air change as low as 1 per hour, discomfort from overheating would be experienced long before harmful concentrations of such products would be reached.

RESEARCH FELLOWSHIPS IN TUBERCULOSIS

The Medical Research Council announces that it has made the following awards of Dorothy Temple Cross Fellowships for the academic year 1935–6, under the terms of the benefaction in that name for research fellowships in tuberculosis:

GEOFFREY BERNARD BROOK, D.Sc.Ed., M.R.C.V.S., Senior Assistant Veterinary Officer, Derbyshire County Council.

JAMES WALLACE CRAIG, M.D.Dub., Assistant Medical Officer, King Edward VII Sanatorium, Midhurst, Sussex.

ALFRED HENRY BRIAN RHODES, M.B.Glas., House-Physician, Brompton Hospital, London

The July meeting of the London Association of the Medical Women's Federation was held at the British Post-Graduate Medical School, Ducane Road, Shepherd's Bush. After welcoming the members to this new school Professor Francis R. Fraser noted the broad differences between the types of clinical cases seen at Hammersmith Hospital of the London County Council, to which it was attached, and those seen at the voluntary hospitals. He showed some typical cases of rheumatoid arthritis, demonstrating the difference in mobility of joints and in general well-being between cases which had come under observation and treatment at an early stage and those which had been neglected. He emphasized the importance of keeping the joints moving, and the value of heat, however applied, in treatment. He also showed cases of osteoarthritis, and contrasted cases of heart disease in which the primary failure was on the right and on the left side. Finally Professor Fraser showed a child with blue sclerotics and fragile bones. After the meeting the members were shown round the pathological department of the school.

INTERNATIONAL NEUROLOGICAL CONGRESS IN LONDON

LATER PROCEEDINGS

The second International Neurological Congress, the early part of which was reported in the last issue (p. 223), ended its numerous and busy sessions on August 2nd. Before leaving London it was resolved, on the proposition of Professor VIGGO CHRISTIANSEN, to hold the third congress at Copenhagen four years hence. A large minority desired to meet in Paris, and the conflict of views almost led to "international complications." Three different methods of counting heads had to be employed before the Danish capital was chosen.

This second congress was predominantly German-speaking, but except in the business sessions there was no demand for interpretation, and apparently everybody understood everybody else. Even humour, which is the first thing to perish in translation, managed to "get across" the polyglot assembly. In the discussion on the hypothalamus, for example, there was general laughter at the description by a German speaker of how in a case of diabetes insipidus a transplant was made of the posterior lobe of the hypophysis from an alcohol addict, whereupon the patient, an abstemious man, developed an irresistible craving for cognac, for which he was treated in a psychiatric clinic!

Although the members sat closely to the scientific discussions, a certain amount of outside entertainment was enjoyed. An official reception was given at Lancaster House by the Government, and there were receptions also at the Royal College of Physicians, the Royal College of Surgeons, and the Royal Society of Medicine. Those interested in the social and institutional aspects of epilepsy spent a day at Lingfield Epileptic Colony, where 250 children and 200 adults are resident, and there an informal discussion took place on the types of institutional treatment in various countries. The congress banquet, followed by dancing, took place at Grosvenor House, Park Lane. Another event, not strictly of the congress, but held in association therewith, was the delivery by Professor OTFRID FOERSTER of Breslau of the Hughlings Jackson Memorial Lecture of the Section of Neurology of the Royal Society of Medicine. Professor Foerster discussed the motor cortex in man in the light of Jackson's doctrine. The lecture, which was delivered in B.M.A. House, is the subject of a leading article (see p. 260).

It was gratifying to observe the acclaim with which Hughlings Jackson's name was greeted by Continental neurologists. One of the papers, by Dr. OTTO SITTIG of Prague, was on Jackson's views of consciousness and the unconscious, in which it was pointed out that Jackson held a view on the unconscious similar to that of Freud, an anticipation of the founder of psycho-analysis which seemed to have escaped notice up to now. Jackson held that if in disease, insanity, or the dream state the anatomical substrata of object-consciousness—the highest level—were put out of function, the anatomical substrata of subject-consciousness—the next lower level—were raised into greater activity. The positive symptoms of insanity thus came out of the unconscious. Dr. KINNIER WILSON, a Jackson disciple, who presided over this session, said how interesting it was to have one more instance of Jackson's anticipation of things which only became common knowledge after his time and were associated with another name.

Functions of the Frontal Lobe

An unfortunate feature of the congress was the tendency of many speakers to exceed the time limit, with the result that general discussion was constricted. On the morning

devoted to the functions of the frontal lobes ten papers were set down, but by the time the fifth had been delivered the hour of adjournment had arrived. One of the papers crowded out of the principal discussion was by Dr. R. M. BRICKNER of New York, describing a patient who had suffered removal of both frontal lobes for meningioma, 116 grams of brain tissue in all having been removed, so that the function of the missing parts could be deduced by comparing his post-operative with his previous state. The changes were of two kinds: intellectual defects, such as impairment of memory, and impairment of emotional control.

"The frontal lobes have given us ingenuity—intellect, if you will, but this is to be distinguished from intelligence. Intelligence may be thought of as the combined emotional and intellectual output. . . . The indication is that man needs a frontal lobe which can ingeniously comprehend the emotions well enough to control them, instead of merely finding clever ways to yield to them."

The discussion was opened by Professor J. A. BARRÉ of Strasbourg, who devoted his remarks to "frontal ataxia," the name given by Bruns, the German neurologist, to certain disturbances of equilibrium which he had observed in tumour of the frontal lobe. Professor Barré thought that the condition should be reviewed and renamed. Professor DELMAS-MARSALET of Bordeaux dealt with the frontal lobe in relation to equilibrium from the experimental, clinical, and anatomical points of view, mentioning observations on rabbits and pigeons, which suggested its role in orientation. Dr. KURT GOLDSTEIN of New York said that his observations had left him in no doubt that lesions of the frontal lobe, especially if they occurred on the left side, were associated with psychic symptoms. These were not necessarily limited to a disturbance of one function, as, for example, attention or memory, but patients who revealed a disturbance in one of these functions under given test conditions might, on the other hand, show entirely normal responses with regard to the same function in other conditions. Further, the defect was found in all functions, but manifested itself only in particular situations in which a certain type of behaviour was called into play. As to the nature of this "deficiency behaviour," the patient showed a lack in voluntary performances, but did well if his actions were decided directly by his surroundings. If the situation did not call into play this disturbed behaviour the response of the patient might be quite adequate.

Finally, M. CLOVIS-VINCENT of Paris discussed the functions of the frontal lobe as seen by a brain surgeon. In certain conditions (ablation of cerebral tumour or of certain inflammatory lesions) the partial or complete resection of the lobe did not give rise to psychic or motor troubles. But there was in the neighbourhood of the third ventricle a mechanism the excitation or paralysis of which brought about a sudden turgescence of the frontal lobes. It seemed likely that this apparatus was able to bring about sudden circulatory alterations in the lobes, and if a regulating function of this kind existed it would obviously play an important part in the normal and pathological activity of the frontal lobe and in the causation of cerebral oedema or tumour.

There were half a dozen papers at a later session on the functions of the frontal lobes, based on a study of monkeys, and Professor NIKITIN of Leningrad described twenty clinical cases of lesions of the anterior part of the frontal lobes, deducing that the fundamental functions of the lobes were participation in psychical activity, in the function of speech, and in static innervation (tonus).

The Cerebro-spinal Fluid

The physiology and pathology of the cerebro-spinal fluid occupied another morning. The subject was introduced by Dr. L. H. WEED of Baltimore, who reviewed the anatomical and physiological aspects of the meninges and the fluid, pointing out the many problems of structure and function, and of both combined, presented by the circulation of the fluid through the cerebral ventricles and subarachnoid space. Professor G. SCHALTENBRAND of Würzburg developed the same theme, with a description of the anatomy of the choroid plexus, the Virchow-Robin's space, the arachnoid villus, and other structures.

Mr. HUGH CAIRNS of London followed with a discussion of therapeutic measures in disorders of secretion and resorption, these measures including postural treatment, intravenous hypertonic and hypotonic solutions, and drainage by lumbar puncture and by operation. Mr. Cairns mentioned the many different forms of hydrocephalus, and urged the need for extensive combined clinical and morbid anatomical study of the condition in infants. Hydrocephalus in adults presented a different story. These cases were mostly diagnosed as tumour, and the true nature of the condition was only disclosed at operation. It sometimes happened that after operation for removal of an intracranial tumour hydrocephalus was made worse instead of better, and a consideration of such cases threw some light on the similar disorders that were produced by morbid processes. Some saprophytic infection probably occurred during long intracranial operations, and while generally of no more moment than in other operations, there were conditions under which the saprophytes were able to become pathogenic. The most useful procedure was repeated lumbar puncture in the days following operation. Mr. Cairns also asked whether operation influenced the formation of cerebro-spinal fluid, and mentioned a case which strongly suggested that it increased the output.

In the open discussion Dr. J. G. GREENFIELD raised the question whether the cerebro-spinal fluid, as formed by the choroid plexus, and the contribution to the fluid which came from the capillaries of the pia mater were identical in character. The quantitative differences between these two contributions to the fluid were so far unknown. The differential transmission of such substances as bromide and iodide from the blood to the cerebro-spinal fluid, as well as other evidence, suggested some selective process of filtration. In the case of albuminous substances, for example, it was known that there was a considerable difference in the quantity and perhaps also in the character of the albumin according to the source of the fluid, whether the choroid plexus or the capillaries. These differences were sometimes forgotten in the experimental work which was done. He did not want to labour the question too far, because, after all, it was very much a question for the future. The idea that the fluid from the arachnoid underwent repeated and constant changes with variations of blood chemistry was insufficiently established.

The Hypothalamus

The last of the plenary discussions was on the hypothalamus and the central representation of the autonomic system. The first rapporteur was Professor KAPPERS of Amsterdam, who gave a description of the phylogenetic development of the autonomic hypothalamic centres, comparing the structure in fish, amphibia, reptiles, and birds with lower mammals. He was followed by Professor W. E. LE GROS CLARK of Oxford, who dealt in a similar manner with the ontogenetic development and normal conditions in man, and remarked on the outstanding features in the work on the hypothalamus during the last twelve years. Professor W. R. HESS of Zurich dealt with the physiology and Professor J. LHERMITTE of Paris with the anatomico-clinical syndrome. The latter said that there were morbid manifestations of a very distinctive character, the origin of which was to be found in an alteration of the meso-diencephalic centres, and not in a gland, endocrine or exocrine.

Professor A. W. ADSON of the Mayo Clinic said that as lesions in the subthalamic areas, lesions of the spinal cord, and temporary effects produced by regional and spinal anaesthesia indicated a disturbance in normal physiological reactions controlled by the autonomic nervous system, it seemed possible that interruption of the sympathetic pathways might be effective in altering the course of or curing disease. Observations following sympathetic ganglionectomy, trunk resection, and ramisection strongly suggested a central control as accounting for pathological vaso-constriction, as did the vasomotor changes produced by foreign protein therapy and by the administration of anaesthetics.

Professor O. LÖWENSTEIN of Nyon gave a lantern demonstration illustrating experimental researches on the manifestation of physical and psycho-physical constitution in the vegetative nervous system. He took the pupil reflex to light as a representative sample of an antagonistically and twice-innervated reflex. The form of the pupil reflex might be altered by psychic influences, and the physical type of reaction combined with the psychical type produced a certain number of " psycho-physical constitutions." He claimed that these results demonstrated the scope of constitution therapy in the vegetative nervous system.

In the open discussion Dr. O. HIRSCH brought forward the question of diabetes insipidus and pituitary cysts. It seemed probable, he said, that pituitary cysts produced diabetes insipidus by compressing the posterior lobe of the hypophysis. He described experiments suggesting that diabetes insipidus was of hormonal—that is, hypophyseal—nature, but that the function of the pituitary body was dependent upon the hypothalamus.

Professor Pavlov on Higher Nerve Function

Professor PAVLOV's address, to which a brief allusion was made last week, was on the types of higher nerve function and their connexion with the neuroses and psychoses. He said that there was now available a very large amount of investigated material concerning higher nerve function in dogs. From this material he took three points which had special reference to morbid disturbance: the processes of stimulation and inhibition, the relationship or balance between the two, and their mobility and instability. These factors played an important part in the onset of nervous and so-called psychological diseases. Until the time when the species *Homo sapiens* appeared the animals were bound up with their environment in such a way that the immediate influences of that heterogeneous environment invaded the receptive centres and were conducted to the corresponding cells of the central nervous system. These agencies were the only " signals " of the outside world. But with the coming of man there arose to quite phenomenal perfection signals of a secondary order in the form of words—the spoken, the heard, the seen word—so that it came about that everything which man received from his environment was described in the terms of these new signals. Man used them not only in his dealings with his fellow creatures, but in his communion with himself. The enormous significance which came to be attached to the word ensured the predominance of this new signal, although it remained really only a secondary or derived signal. To-day multitudes of people worked their words, turned everything into words, directed their life by words, scarcely coming into touch with reality. Owing to this secondary system of signals and to its modification of life, mankind could be divided into several types—on the one hand the artificer, and on the other the thinker, with a big middle type which combined the activities of both. Professor Pavlov elaborated his theme that constitutional neurasthenia was the disease conformation of a weak middle type, hysteria the product of enfeeblement of the artificer type, and psychasthenia that of enfeeblement of the thinker type. At the end of his discourse he mentioned some new work by his colleague Professor Petrowa, on unstable inhibition processes in dogs, in which deep phobias, as shown by exaggerated inhibitions, had been experimentally elicited or set aside.

Clinical Neurology

To cover the 250 miscellaneous papers which were given in twenty sessions is impossible. Four sessions were devoted to clinical neurology. At one of them Sir THOMAS LEWIS dealt with the subject of pain as the result of the products of metabolism or tissue damage. Because simple physical interferences were apparently capable of stimulating nerves directly, there was a tendency to interpret pain as a result of physical changes induced in nerve endings directly by the pain-producing agency. But other modes of peripheral stimulation must be considered, and evidence had accumulated to suggest that malnutrition or injury of tissues supplied by sensory nerves might so change the local chemical or physico-chemical environment of the sensory nerve endings as to stimulate them. The products of the work of somatic muscle might accumulate in the tissue spaces, resulting in a change of environment sufficient to start pain-giving impulses, and the same was true of substances released from the skin in skin injuries.

The mechanism of certain headaches was discussed by Drs. CLARK, HOUGH, and WOLFF of New York, who had made investigations on the role of the intracranial blood vessels in headache by means of intravenous histamine. Their conclusions were that in experimentally produced headache pain is associated with dilatation and distortion of the intracranial vessels. Dr. RUSSELL BRAIN brought forward a study of twenty-one cases of ophthalmoplegia associated with thyrotoxicosis. This was a disorder of middle life, due probably to a disturbance of function of the ocular muscles, resulting in part from exophthalmos and in part from a toxic myopathy occurring in thyrotoxicosis, and in rare cases affecting the bulbar and general musculature.

Hypertrophic neuritis, first mentioned thirty years ago, but with still very few reported cases, was described by Dr. HUGH GARLAND of Leeds. The commonest signs were progressive claw-foot, with loss of tendon jerks ; wasting, sensory loss, and kypho-scoliosis were less constant, and pupil changes, ataxia, tremors, fibrillation, and nystagmus unusual. Dr. S. NEVIN added two more to the twelve or fifteen cases known of late forms of progressive myopathy. The pathological changes in these cases, beginning in late adult life, were not typical of those seen in juvenile myopathy. The glycine treatment of the myopathies was mentioned by Dr. FORSBERG of Oslo. Cases of muscular dystrophy and of neuritic muscular atrophy were found to respond to glycine ingestion with increased creatine excretion.

Dr. RITCHIE RUSSELL of Edinburgh drew attention to the disturbances of memory following head injuries. During the slow recovery of consciousness the memory of distant events returned before the memory of more recent. In a few cases it was found that events which occurred immediately before the injury were remembered indistinctly during the period of confusion, though there was complete amnesia for these events after consciousness had returned. Dr. W. G. LENNOX of Boston gave the results of a study of blood leaving the brain in unanaesthetized human subjects with reference to loss of consciousness. The experiments suggested that even acute cerebral circulatory failure or anoxaemia was not the exclusive explanation of the loss of consciousness, but was only a stimulus to a neural mechanism.

Spinal Cord Conditions

Eleven cases of syringomyelia were reviewed by Dr. H. COHEN of Liverpool (with whom Professor R. E. KELLY was associated). The conclusion drawn was that there was no single lesion responsible, but that syringomyelia was a syndrome and not primarily a disease. In several of the cases the patient said that he felt better after operative intervention, but in no case could any objective improvement in the condition be observed. In reply to Dr. J. LHERMITTE of Paris, Dr. Cohen said that he had found no distinctive improvement under *x*-ray treatment ; cases under *x*-ray treatment fluctuated, but so did those which had no treatment at all.

Two New York workers, Drs. BRODIE and WORTIS, mentioned a method of inducing active immunity to poliomyelitis by injecting formalized monkey virus into children. By this method active immunity persisting for at least five months had been obtained.

Drs. GRUNDT and FORSBERG of Oslo described a series of cases of tic douloureux in which the possible aetiological importance of peridental inflammatory processes had been investigated. In the majority complete and rapid cure resulted from removal of radiologically and histologically demonstrable foci.

The effects of cobra venom in the treatment of pain were described by Dr. KORESSIOS of Paris. It was employed successfully in the treatment of pain of cancer, lightning pains of tabes, sciatica, and pains resistant to

usual treatment. It was also found to act on the peripheral vascular system. Dr. BLAKE PRITCHARD discussed neuro-muscular disturbances in myasthenia gravis and the therapeutic improvement brought about by eserine and its analogues.

Dr. A. W. ADSON brought forward a study of the clinical results obtained at the Mayo Clinic by extensive sympathectomy and rhizotomy in essential hypertension. Experience suggested that major operations on the nerves were the most effective in treatment. Professor M. PEET gave the results of sixty operations for hypertension at Ann Arbor, Michigan. The surgical procedure consisted of resection of the greater and lesser splanchnic nerves and of the lower dorsal sympathetic chain. The results showed 85 per cent. with some degree of improvement.

Psychopathology

In a session devoted to psychopathology Drs. NATTRASS and EVANS described the apparatus installed at Newcastle General Hospital for the production of general pyrexia by short-wave therapy. The treatment had been applied to fifteen cases of dementia paralytica, and the results appeared comparable with those of malaria therapy. Dr. IRENE KAUFFMANN of Budapest gave a comparative study of eighty-three patients with general paralysis treated by malaria therapy compared with forty-four in a control group. The malaria-treated cases on the whole showed more improvement in intellectual faculties and social behaviour. Dr. Kerim of Stamboul gave an account of *raki* addiction in Turkey; the mental and nervous sequels were most frequently polyneuritis and optic neuritis, and hemiplegia. He had never seen in fifteen years at Stamboul a case of delirium tremens. Drs. M. CREAK and E. GUTTMAN of London mentioned residual tics after chorea. They gave an account of three cases in which chorea was followed by continuous tic-like movements, accompanied by meaningless or inappropriate compulsive utterances. M. ESZENYI of Budapest described the effect of hypnotism in chorea. This had been employed for two years in his neurological and psychiatric clinic to the exclusion of all other methods of treating this condition. The employment of hypnotism was not difficult, choreic patients being very suggestible, and no untoward consequences had occurred. Professor DE GIACOMO of Agrimento described the effects of bulbocapnine and other cataleptoid substances on psychical reactions. The times of simple reaction were greatly influenced, but discriminative action hardly at all. Professor MARCUS of Stockholm, on the basis of the findings at necropsy in a unique case of traumatic epilepsy, in which the attacks always set in with a gustatory aura, deduced a taste centre in the presubicular or subicular part of the hippocampal gyrus and perhaps in the neighbouring area of the dentate gyrus.

Miscellaneous

There were several papers on intracranial tumours. Dr. CARNEGIE DICKSON pointed out the tendency of bronchial carcinoma to produce multiple cerebral metastases, though the pulmonary lesion might remain inconspicuous or latent. Professor BERGSTRAND of Stockholm gave reasons for thinking that the common interpretation of the radiographic picture in Sturge-Weber's disease was fallacious. Drs. FRIEDMAN and SHICK of New York described pseudo-peripheral facial paralysis as a sign of localizing value in brain tumours.

Some admirable cinematograph films were shown. Sir G. ELLIOT SMITH showed a film of the visual cortex; Dr. R. G. CANTI and others, of tissue culture of gliomata; Professor E. LANDAU of Lausanne, of the phylogenetic development of the island of Reil; Professor R. A. PETERS and Dr. O. R. BREIN of Oxford, of disturbances of locomotion following diet deficient in vitamin B; Dr. J. ZADOR of Budapest, of equilibrium reactions in disease of the central nervous system; and Professor DELMAS-MARSALET, of incoordination after lesion of pre-frontal lobe in the dog. Another film of much interest was by Dr. MAYER-GROS, illustrating the symptoms of constructive apraxia with a characteristic disturbance of behaviour in space. The many excellent *x*-ray demonstrations also deserve a word, especially Dr. E. W. TWINING's radiological studies of the third ventricle. An account of this worker's method was given; it has been devised for the complete visualization of the third ventricle without the necessity for large air replacements.

Dr. GORDON HOLMES as president of the congress and Dr. KINNIER WILSON as secretary-general deserve hearty congratulations.

LIFE ASSURANCE MEDICINE

INTERNATIONAL CONGRESS IN LONDON

The triennial Congress of Life Assurance Medicine was held in London, at the offices of the Prudential Assurance Company, during the last week of July, under the presidency of Sir WALTER LANGDON-BROWN. The social events of a very successful meeting were a Government reception at Lancaster House, a banquet at Dorchester Hotel, and a reception by Sir Edgar Horne, chairman of the Prudential Company.

Assessment of Risks

The first of the three days' discussions was devoted to the assessment of risks, and was opened by Dr. JOSEF STURM (Munich), who described the methods most generally used for extra rating—namely, an addition to the premium, an addition to the age of the proposer, and a limitation of capital payments. Dr. CHESTER BROWN (Newark, N.J.) described the numerical system for estimating risks, which had been the foundation of all modern technique. In the ensuing debating Dr. HÖRNIG of Berlin (to whom, as well as to Dr. Otto May, a deserved tribute was paid for the organization of these congresses) briefly described four methods of risk selection: the purely individual, class experience, the numerical, and a combination of the first and third.

Prognosis of Hypertension

The second discussion, on the prognosis in hypertension, was opened by two French rapporteurs, Dr. ETIENNE MAY and Dr. JEAN OLLIVIER. They pointed out the errors to which mass statistics were liable—for example, taking the systolic pressure only, or, while taking the pressures, neglecting the clinical aspects. A high diastolic pressure and a low systolic meant a grave prognosis, especially in subjects under the age of 40. Hypertension of neuro-vegetative instability, even with a high maximum, was relatively benign. In such a condition a margin of 10 mm. for the systolic and 5 mm. for the diastolic might be allowed. Hypertension of the obese was also relatively benign if it could be modified by dietetic influences; if not, there should be a high loading. Professor L. WINTERNITZ (Trieste) stressed the condition of the kidneys; if this was good the prognosis was relatively favourable. It was important to learn the heredity of the proposer and the age at death of members of his family. Death occurred at a somewhat earlier age in those in whom there was an element of heredity. No invalidity benefits should be granted to people with hypertension.

Dr. J. LANKHOUT (The Hague) thought that the value of the electrocardiogram might easily be over-emphasized. Dr. JENNER HOSKIN (London), on the other hand, had found, even in cases in which the condition was slight, that the findings of the electrocardiogram were of value. Professor J. RIEUX (Paris) said that he laid less emphasis upon the figures for the respective pressures than upon objective and subjective symptoms. Compensated cases had a favourable prognosis. Dr. OSCAR WYSS (Zurich) pointed out that there were means of securing a temporary lowering of blood pressure sufficient to pass the examina-

tion, so that it was as well to repeat the examination later, when quite different results might be forthcoming. Dr. S. KRZEWSKI-LILJENFELD (Warsaw) thought the age of most unfavourable prognosis was between 40 and 50. Dr. LINDSTEDT (Stockholm) found in his experience the average systolic pressure to be 2.3 mm. higher than in the American statistics, whilst the diastolic was about the same. Dr. K. SECHER (Copenhagen) expressed scepticism with regard to the finer discriminations between different pressures. Dr. CARL SCHWENSEN (Aalborg) stressed the importance of subjective symptoms; as soon as these appeared the prognosis was worsened. Dr. T. W. PRESTON (London) from "Prudential" material confirmed the increased importance of hypertension in persons under 50 years of age. Overweight was also an important factor, especially if combined with arteriosclerotic changes or other heart or kidney conditions. Dr. USTVEDT (Oslo) referred to the medical examination of army recruits, where in 9 per cent. a difference of 20 mm. was remarked between the first and a follow-up examination. Dr. HELGI TOMASSON (Reykjavik) had found that in complete hypertension the mortality was from six to eight times as great as when the systolic pressure alone was affected.

The Acceptance of Glycosurics

Sir WALTER LANGDON-BROWN, in introducing this subject, declared that diabetes was on the increase, and as it affected largely people with the higher incomes it was important from the life assurance point of view. People with a "recessive" family history were more prone to the graver forms of diabetes than those with a "dominant" heredity. Blood sugar curves had not solved all diagnostic difficulties in the way expected of them. A curve which had a quick rise and a high fall after more than one and a half hours, provided that the person had been on normal diet for the three preceding days, was characteristic for diabetes. Renal glycosuria was insurable, but the onus of proving that the glycosuria was benign must be shifted on to the proposer.

Professors VAN DEN BERG and DE LANGEN of Holland, in a joint paper, also remarked on the large incidence of diabetes, but found it difficult to decide that it was an increasing incidence. In trying to distinguish between slight and severe cases it must not be forgotten that the development even of slight cases could not be foreseen. The distinction could only be made after systematic research carried out at a hospital; they were aware of the difficulties attached to such a procedure, but these might be overcome by an arrangement among the companies, and a diabetic who refused his consent to such an investigation should be rejected. Young persons might be granted short-term insurance provided their social circumstances allowed appropriate treatment with insulin. Older diabetics should only be accepted if there was no heart impairment, no overweight, and no suspicion of tuberculosis.

Dr. BATTY SHAW remarked on the heavy losses which companies suffered from diabetes among their insured persons who had had no glycosuria on acceptance, whereas there were comparatively few deaths from diabetes among those who had been loaded for glycosuria. In the course of a long discussion Dr. E. GARDE (Copenhagen) held that all glycosurias were essentially of the same class, but the occasional psychic glycosuria might be judged more favourably; Dr. COMIRATO (Venice) thought that diabetics could now be just as well accepted by insurance companies as sufferers from other diseases who needed long treatment, and Dr. WAGNER (Berlin) suggested that nowadays many people were certified to have died from other diseases when in fact death was due to diabetes, and that morbidity statistics, the result of periodical examinations, would be of more value in this connexion than annual mortality returns.

Gastric and Duodenal Ulcers

A discussion on gastro-duodenal ulceration and life assurance was opened by Professor I. ROMANELLI (Rome), who lamented the absence of any complete statistical material. Prognosis in these cases depended on the general condition of the proposer at the time of examination, and on the period which had elapsed since his last attack. If pain was present acceptance must be deferred. After six months, provided there had been no further pain and the general state was good, there might be acceptance with a load, and if five years elapsed without symptoms the premiums could be decidedly reduced.

Drs. FAROY and CARRIÉ (Paris) said that 30 per cent. of peptic ulcers did not have any complications. Gastric ulcers showed twice the mortality of duodenal ulcers. Loading and short-term insurance seemed necessary, but there was no need to be too rigid. Periodical examinations should be required, and for this purpose special institutions should be established. Such facilities would make matters decidedly easier for assurance concerns. Dr. K. SECHER (Copenhagen) said that 60 per cent. of cases discovered and treated within six months from the commencement of the lesion were curable, 37 per cent. were curable after three years, and only 5 per cent. after ten years. Dr. HÖRNIG (Berlin) felt that radical examinations, with *x*-rays as a routine procedure, were not feasible, and that a great deal could be learned by questioning the family physician.

Health Service and Life Assurance

The last of the discussions was on health service and life assurance. Dr. S. B. SCHOLZ, jun. (Philadelphia), reviewed the growth of the system of periodical examinations in America, the land of its origin. It began in 1909 with the establishment of a health conservation bureau, extensive and well planned, by the Provident Life Assurance Society of New York, and since 1914, with the foundation of the Life Extension Institute, the Metropolitan and other companies had taken it up, and now more than one-third of the companies in the States granted health service in one or other form.

Dr. OTTO NEUSTÄTTER (Berlin) followed with a survey, illustrated with charts and tables, of the health services in the rest of the civilized world. At the end of 1934 there were 187 companies in twenty-one States which granted health service. Details, he said, could be obtained from a brochure issued from the bureau of the Congress.* He described the different forms of collective and individual service afforded. The greater extent to which free choice of doctor was allowed in Europe as compared with America helped to account for the far greater popularity of the service in this hemisphere. Besides the individual prophylactic service there were lectures, exhibitions, and the distribution of literature; also a service whereby financial help was afforded in cases where operations were necessary or sanatorium treatment advised. Nursing services also helped to disseminate health ideas. He gave figures showing the great increase in the utilization of such services during the last ten years, and he believed that this work was reflected in a lowered mortality. Self-selection did not suffice to explain the good results.

A number of short papers were also read at the Congress, including an interesting historical review of the procedure in selection of risks, by Dr. HÖRNIG; one on the possibility of diminishing the differentiation of premiums by estimating risks, by Professor BERGSTRAND (Stockholm), and another by Dr. BUNGE (Buenos Aires), on the organization of medical examiners. Sir WALTER LANGDON-BROWN closed the Congress by remarking in congratulatory terms on the work accomplished, which, he said, however, had also shown how many problems yet remained to be faced.

In connexion with the Congress an exhibition on health services was arranged, illustrating the health propaganda work done by different companies and in particular by the Deutsche Zentrale für Gesundheitsdienst der Lebenversicherung of Berlin, the Prudential, and the Metropolitan of New York, and a number of others.

* 142, Holborn Bars, London, E.C.1.

England and Wales

A Welsh Medical Centenarian

We are indebted to Dr. Ivor J. Davies for the following note on "A Pioneer in Pathology": Dr. Griffith Evans of Bangor, North Wales, attained the age of 100 this week, for he was born at Towyn, Merioneth, on August 7th, 1835. He was an Army veterinary surgeon, and served in Canada, and later in India, where in 1880 he discovered a trypanosome as the cause of surra, a disease of horses, mules, camels, and cattle. This far-reaching discovery was confirmed by other observers after much opposition, and the protozoon was named by Steel and Crookshank *Trypanosoma evansi* (1885). Evans was thus the first to discover a pathogenic trypanosome, and laid the foundation of protozoon pathology and the subsequent discovery of the trypanosome of tsetse-fly disease by Bruce in Zululand, and that of the *T. gambiense*, with which the names of Dutton, Todd, Castellani, Bruce, and Nabarro are so honourably associated. Griffith Evans obtained the M.D., C.M. of McGill University, and it was whilst at Montreal that he met Osler, and a lifelong friendship resulted. Evans lived at Cardiff for many years with his daughter, Dr. Erie Evans, who was a well-known medical practitioner. Shortly before the war Osler visited Cardiff, and probably for the first time, for he inquired for Griffith Evans. A few of us who were at that time new to the place were unable to reply, when Osler exclaimed, "Don't you know where Griffith Evans lives? He was the first man to see a pathogenic trypanosome." Osler, with his encyclopaedic knowledge of medicine, knew that Evans resided in Cardiff, although they had not met for many years. A little later we saw the Regius Professor and Dr. Erie Evans going off arm-in-arm to see her distinguished father. Griffith Evans was awarded the Steel Medal R.C.V.S., the Mary Kingsley Medal of the University of Liverpool, and the D.Sc., *honoris causa*, of the University of Wales. The freedom of the city of Bangor was conferred on him some time ago.

L.C.C. Hospital Nurses: Employment of Women Orderlies

A long debate took place in the London County Council on July 30th on proposals to fix the establishment of nursing staff at twelve of the large general hospitals of the Council. In 1930 the Council announced its intention to work to a fifty-four-hour (net) week for nurses as soon as possible, but this has not so far been fully achieved. The new proposals lay it down that a fifty-four-hour week (inclusive, in the case of probationer nurses, of two hours for lectures) shall be applied in these twelve hospitals for both day and night work. It is considered that generally, on the assumption that the ward beds will be occupied by patients of acute, semi-acute, and chronic types in normal proportions, it will be desirable to provide day nursing staff in the proportion of one unit of staff to six patients, and a combined day and night nursing staff in the proportion of approximately one unit of staff to four patients. Children's wards will be dealt with on a more generous basis, with a combined day and night ratio approximately of 1 to 3.5.

The proposal which has excited most attention is to employ women orderlies in addition to, or in substitution for, probationer or assistant nurses. Their duties will consist chiefly of the cleaning work at present carried out by probationer nurses during their first year of training. The results of the Council's nursing examinations showed, said the report of the Hospitals and Medical Services Committee, that the training of the probationer nurses needed to be strengthened on its practical side; but these girls, especially during their first year of training, were so occupied with routine cleaning duties as to be unable to give the requisite time to concentrate on the elementary nursing duties in which it was essential that they should be receiving instruction. Sisters often found themselves free to impart instruction, but the probationer nurses could not be spared from their cleaning duties. It is proposed that there shall be one woman orderly in each ward unit with a sister in charge. Their duties shall be: (1) to dust, clean, and polish ward equipments; (2) to clean sanitary annexes and equipment; (3) to assist in preparation, distribution, and clearing away of patients' meals; (4) to assist with "chronic" or "convalescent" persons requiring help on account of age (that is, elderly people or children), by "help with feeding, washing, blanket bathing, and taking to the bath"; (5) to give assistance to the senior nursing staff if required in the blanket bathing, dressing, and "moving or making of bed of a patient for whom two persons are required simultaneously to assist," but except in these last circumstances women orderlies would not attend "ordinarily" on "ill" patients. The total nursing staff proposed at the twelve hospitals is 2,634, as compared with 2,348 at present employed, and the women orderlies 238, as compared with twenty-five at present employed.

Debate in the Council

Mr. SOMERVILLE HASTINGS, in moving the recommendations, said that they were designed to improve the nursing staff in quality as well as quantity. Twenty-five women orderlies were employed in the transferred hospitals when the L.C.C. took over; he had seen them at work, had discussed the matter with matrons, and had heard practically no complaints. The employment of women orderlies was a charter of emancipation for nurses. A good nurse was not made, but born; she was a woman with a sense of vocation, and desired to be trained in the best possible way, but unfortunately in the past this quality in her had been exploited, and she had been made a source of cheap labour.

Dr. FLORENCE BARRIE LAMBERT, who was chairman of the Hospitals and Medical Services Committee in the last Council, moved the reference back, with instructions to the committee to bring up a fixation of nursing staff on a less extravagant and more equitable basis, with the omission of the employment, in hospitals approved as complete training schools for nurses, of women orderlies on nursing duties, which, in the interests alike of patients and probationer nurses, should not be undertaken by untrained persons. Dr. Barrie Lambert, who was almost inaudible in the press gallery, said that she had no objection to women orderlies doing domestic work only, but she felt that the present proposals were opening the door to nursing work by such persons, and enabling the ward sister to say, if challenged, that they did not "ordinarily" do it. Some of the duties suggested for the women orderlies, such as blanket bathing, were highly important in the training of the nurse, and to employ untrained women on work which should be done by a probationer in company with, and under the supervision of, a nurse would lower the reputation of the Council's hospitals.

Mr. DAN FRANKEL declared that Dr. Barrie Lambert was doing great disservice in attempting to make party propaganda by scaring the people of London with regard to the nursing services in the municipal hospitals. These women orderlies were employed to the number of twenty-five during Dr. Barrie Lambert's chairmanship of the committee; they would be largely increased in number, but no change would be made in their duties. They had been working since 1930 in four of the hospitals.

Dr. S. MONCKTON COPEMAN, in supporting the reference back, said he had difficulty in understanding the proposal. If these women were to take the place of probationer nurses then a remonstrance ought to be made against the lowering of the nursing service in the estimation of the public. At one of the hospitals where ward orderlies have been employed—namely, Paddington—he was well acquainted with the state of affairs, and he knew that these women did nothing whatever in the way of nursing service beyond cutting up food for chronic patients.

Miss AMY SAYLE, who worked as a woman orderly during the war, said that the recommendations went a long way to meet the admitted deficiency in the quantity and quality of the nursing service by increasing the number of nurses who were properly so called, and reducing the hours to a level which the former Council considered desirable but never put into effect. An appreciable number of probationers who would make good nurses were "choked off" by the number of

hours they had to give to these unpleasant duties. Mrs. GAMBLE, a Municipal Reform member, said that they wanted to spare their nurses unnecessary labour, but not to spare them unpleasant labour required for their training. Mr. G. P. BLIZARD, a Labour member, urged that too much physical strain was imposed upon nurses, and there need be no surprise if there was a decay of vocational spirit.

A long debate continued on strictly party lines, the Municipal Reformers supporting the reference back, and the Labour members supporting the proposals, and on a division the reference back was defeated by 72 votes to 52, and the proposals went forward.

Ireland

Tuberculosis in Belfast

In his annual report for 1934 Dr. Andrew Trimble, chief tuberculosis officer for the county borough of Belfast, remarks that although 595 more patients were examined in 1934 than in 1930, and 448 more were found to be suffering from tuberculosis, this need not be presumed to indicate an increased incidence of the disease in the community. It is more probably attributable to the operation of the Medical Benefit regulations, which came into force in 1930, and in accordance with which the panel practitioner is required to report to the chief tuberculosis officer any patient whom he finds *or suspects* to be suffering from tuberculosis. The increase is also possibly due to the more extended use by general practitioners of the facilities provided at the tuberculosis institutes for diagnosis in all classes of patients. With regard to the high percentage of contacts examined of all ages (47 per cent.), it is pointed out that the majority of these were children who had previously been noticed to be ailing by the parent or the visiting nurse ; this shows the importance of the visiting nurse service. There has been a diminution of the relative numbers of women found to be tuberculous at their first examination during the last twenty years ; thus, for every 100 men found to be tuberculous in 1915 there were 150 women, whereas in 1934 the comparable figures were 100 and 106. Again, in 1915 for every 100 males dying from pulmonary tuberculosis there were 144 deaths in women from this complaint, whereas in 1934 the proportion was 100 to 102. Dr. Trimble thinks that these figures show that the course of the disease is gradually becoming more chronic and fibrotic, a fact which may explain the lengthening period now observed between the inception of the disease and its termination. In 13.5 per cent. of the total re-examinations of domiciliary patients the disease was found to be apparently cured or quiescent. Increasing use has been made of the facilities for *x*-ray examination, and the artificial light installation has again been of value in treating glandular and osseous tuberculosis and lupus. The results of treating delicate child "contacts" with the carbon arc lamp have been most gratifying, and the new infra-red (gas) lamps have proved useful in treating painful conditions generally, as well as in the promotion of cure in the more slowly healing ulcers. Dr. Trimble states that he has derived great assistance from the sedimentation test and blood cell assessment in guiding prognosis and treatment. A follow-up has begun of patients who have albumin or albumose in the sputum without tubercle bacilli. A table is given in the report showing that for every 100 persons who died from pulmonary tuberculosis in Belfast in 1918, only 37.8 died in 1934, a reduction in the rate of more than 62 per cent. in fifteen years.

Veterinary Congress in Belfast

The annual congress of the National Veterinary Medical Association of Great Britain and Ireland was held in Belfast from July 29th to August 2nd, under the presidency of Professor J. F. Craig. Among the topics discussed were some aspects of red-water fever in cattle ; coccidiosis in bovines and poultry ; the position of the veterinary officer in the control of milk with special reference to communicable diseases ; the commoner helminth parasites of the respiratory and alimentary tracts of the domestic ruminants ; and the work of veterinary officers with special reference to the production and inspection of imported meat foods. Mr. P. F. Dolan, M.R.C.V.S., dealing with the subject of the control of milk, touched on the value of self-contained herds, and reviewed the steps which had to be taken in creating and maintaining herds free from such diseases as tuberculosis, mastitis, and abortion. He detailed the requirements in the prevention of communicable diseases and the production of high-grade milk. Bacterial counts, he said, were of great help in the control of milk, but they could not replace inspection at the source, and must not be allowed to cover up dirty methods. He approved the development of pasteurization in bottle, and thought the holding process, under proper supervision, was a satisfactory method. Lieut.-Colonel T. Dunlop Young, M.R.C.V.S., suggested that refresher courses in meat and milk inspection should be a regular feature of all veterinary colleges. He described the work of veterinary officers in the production, preparation, storage, transport, and inspection of meat foods, and dealt with the procedures of meat inspection in Great Britain and the examination of tinned foods. This paper was copiously illustrated with lantern slides.

Inadequate Salary for Medical Officers at Wicklow Fever Hospital

At the last meeting of the Council of the Irish Medical Association the following resolutions were passed unanimously: (1) That medical practitioners be asked not to apply at the salary offered for the position of medical officer to the Fever Hospital, Wicklow ; that the resolution be published in the Supplement to the *Medical Press and Circular* ; that a copy be sent to Dr. T. Hennessy with a request to have it published in the *British Medical Journal* ; and that copies of the resolutions be sent to all medical practitioners in County Wicklow. (2) That all medical practitioners be asked not to act on the Selection Board for the position of medical officer to the Fever Hospital, Wicklow, at the totally inadequate salary of £40 per annum, or for any position at a salary not considered adequate by the Council of the Irish Medical Association.

CORRESPONDENCE

Maternal Mortality in Scotland

SIR,—The authors of the Scottish Department of Health report have produced a valuable and detailed analysis of maternal morbidity and mortality which deserves careful study by all interested in the practice of midwifery in Scotland. The report states that the proportion of avoidable maternal deaths was 58.7 per cent. This contrasts with percentages for England and Wales of 45.9, and for New York City of 65.8, ascertained on an approximately similar basis.

No doubt, in an ideal community where every pregnant and parturient woman was anatomically and physiologically perfect, and where there were no social and economic difficulties, maternal mortality could be reduced to very small proportions ; but the statement that 58.7 per cent. of maternal deaths are "avoidable" is, in any immediately practicable sense of that term, quite fantastic. The authors recognize this. They say (p. 69): "Clear understanding of the use of the term in this report will obviate undue optimism as to the future." They also say (p. 24): "There has been an unfortunate tendency of late to over-emphasize the dangers of childbearing." Yet their use of the word "avoidable" can only mean to the general public that what was avoidable should have been avoided, and that someone was to blame because it was not avoided. The conclusions and recommendations are many and in some respects inconsistent. Some are particularly valuable—for example, one attendant throughout ante-, intra-, and post-natal periods. Some are without value—for example, the

statement that there is a great dearth of maternity beds, and the advocacy (p. 28) of concentration of maternity hospitals. One or two of these conclusions and recommendations merit detailed criticism.

The authors emphasize as contributory factors inadequate ante-natal supervision, hurried and unnecessarily meddlesome midwifery, inadequate hospital accommodation, and nursing by handywomen. On page 32 are given the maternal mortality rates from 1856 to 1933. Since 1910 these have been at a higher level than before, and even since 1910 they have continued to increase. Yet since 1910 ante-natal supervision has come into existence. From data on page 17 one can calculate that of doctors' fatal cases 55 per cent. received good ante-natal supervision, 10 per cent. had it and ignored it, and 35 per cent. were inadequately supervised. It is clear that in non-fatal cases the proportion receiving adequate ante-natal care must have been equal or higher. Hurried and meddlesome midwifery is admitted to be much less frequent than formerly. A greater proportion of cases are delivered in hospitals. Nursing by handywomen is now, I suppose, non-existent in the cities, and may have diminished a little in rural areas. On the theory of the authors and of obstetricians generally these changes ought to have effected a saving of life. There is, however, an actual rise in the maternal mortality rate. Consequently, those who accept the authors' view have to explain not merely the increase in the maternal mortality rate since 1910, but the greater increase that theoretically would have occurred if these factors had not been operative.

The most challenging statement in the report is that "failed forceps" caused 108 deaths, of which 105 were avoidable. As a corrective to this very serious statement the authors should have ascertained and stated the total number of confinements over which these "failed forceps" deaths were distributed. From the number of deaths investigated and from the maternal mortality rate—6.06 in 1931-3—one can calculate that the 108 deaths occurred in over 400,000 confinements, a "failed forceps" death risk of 1 in every 4,000 confinements, or perhaps 1 in 800 instrumental deliveries. As regards the death rates in spontaneous and instrumental deliveries in doctors' cases only, one finds (p. 174) that 133 fatal cases of puerperal sepsis followed spontaneous delivery, and (p. 180) 142 followed instrumental delivery. As the proportion of instrumental to spontaneous deliveries in doctors' cases is 24 per cent. to 76 per cent. (p. 81), the risk of death from puerperal sepsis is 3.4 times greater in instrumental than in spontaneous cases. If all deaths included in the report under the headings of puerperal sepsis, "failed forceps," and obstetric shock and occurring amongst doctors' cases be considered, the death rate is 5.2 times greater in the instrumental cases. It is difficult to say whether or not this is an undue difference in view of the relatively greater difficulty of the cases which are delivered instrumentally. It may even be that the difference might be greatest amongst the most careful obstetricians who restricted instrumental delivery to those patients whose need was imperative.

Although the maternal mortality rate is higher than formerly, that is counterbalanced by the fall in the birth rate, and the total risk of death as a result of childbearing is only two-thirds of what it was eighty years ago. The report analyses adequately the medical causes of maternal mortality, but the problem is not wholly or even mainly medical, for the underlying causes of maternal mortality are embedded in the very fabric of our civilization.—I am, etc.,

Loanhead, July 30th. W. Hamilton.

*** An article on the Scottish report will be found at page 265 this week.—Ed. *B.M.J.*

Future of Irradiation Treatment of Cancer

Sir,—The correspondence in the last two issues of the *Journal* points out the necessity of establishing cancer hospitals on the lines of sanatoria and the difficulty of staffing such institutions with trained radiotherapeutists. The difficulty is not so much in finding young men and women desirous of becoming radiologists as finding suitable hospitals where adequate practical training can be given. Of the very few "radium officers" now in charge of the national centres several have been trained either at Westminster or Mount Vernon Hospitals. Their training was effected during prolonged residence at the hospital with continuous contact with cancer patients; they proved competent to take charge of important centres and have made good. It is therefore incumbent upon institutions taking an active part in the development of radium therapy and *x*-ray therapy to create posts which give the necessary facilities for the study of radiology. For this purpose as well as for research purposes Westminster Hospital is offering in the very near future three such posts for young men intending to made radiology their specialty. Such posts, either as scholarships or Research Fellowships, will afford the necessary (and very expensive) machinery and material essential for the study and furtherance of radiotherapy. With the help of the authorities granting the diplomas in radiology it should not be difficult to select the very best candidates for such posts. It is our belief that the three posts at Westminster Hospital will not lack candidates, and the scheme so initiated may be the beginning of the provision of trained radiotherapeutists.—I am, etc.,

London, W.1, Aug. 5th. Stanford Cade.

Extrasystoles

Sir,—Dr. A. G. Gibson's valuable paper and the letter of Dr. Frewen Moor (*Journal*, August 3rd, p. 229) on the above subject raise some points that I have had in mind for some time. Most of us have to consider the significance of extrasystoles at some time or other. The case of the medical man quoted by Dr. Moor interests me because I have met the type on numerous occasions. The suddenness of the onset of what he describes graphically as "salvoes" of extrasystoles and their equally abrupt termination, together with the fact that the pulse rate is often greatly increased, resembles the onset and cessation of paroxysmal tachycardia.

It is very common although not invariable for the paroxysm of extrasystoles to come on at night in bed, usually after a change of position, especially when turning from the right to the left side. If the onset occurs before the patient is asleep he is immediately, but not always, conscious of it. If it comes on during sleep it is the exception rather than the rule for him to be awakened by it; but when he wakens in the morning he is conscious of it. If he is wakened it is more likely to be to empty his bladder, because during the attack the secretion of urine is often greatly increased, and is either pale and of low specific gravity or contains phosphates. He then becomes aware of his cardiac condition. The paroxysm commonly persists until after breakfast, or occasionally until after lunch—that is, until after the ingestion of food. The patients themselves are quick to observe this feature after the third or fourth attack. They usually recognize the cessation of the paroxysm by a peculiar and typical sense of relief, and when they feel their pulse they find that it has returned to normal.

I have noticed that attacks which come on in the daytime are of much shorter duration. On physical examination of these patients under normal conditions after the attack has passed off, I have never been able to

detect any indication whatever of organic cardiac disease; but it is not uncommon for them to give rather exaggerated reflexes. Another point is that their blood pressure is usually rather on the low side. In one recent patient of mine, aged 55, it was 118/84, and he was a perfectly healthy man, strong and vigorous, who came of a long-lived family. These blood pressures are very striking, but what has impressed me most is the fact that it is nearly always possible to get an allergic history in the patient himself, his family, or both. For example:

Case 1.—Personal history of migraine and urticaria, and a family history of asthma. Usually has three or four "attacks" of extrasystoles, of which he is conscious, per annum. No organic disease and otherwise quite well.

Case 2.—Extrasystoles began at age of 19. Cyclical vomiting in childhood. Father and sister had asthma. Patient has hay-fever in summer. Is strong and healthy, and has no history or clinical evidence of rheumatism or of cardiac disease. Rather mercurial temperament and very versatile, but has occasional fits of depression.

Case 3.—Patient had slight but definite asthma, which ceased about puberty. Very subject to urticaria during adolescence, especially in summer-time. Mother had severe migraine to an almost disabling degree, and was "subject to palpitation." Died from impacted gall-stones. His own extrasystoles first noticed at age of 28, when they came on at 2 a.m. after a week or so of irregular feeding and a very heavy supper immediately before going to bed. When seen was sitting up in bed, pale, restless, with a sense of impending death, but more frightened than ill. Attack passed off in about two hours, after pot. brom. 30 grains, mag. carb. pond. 20 grains, aq. camph. ad ʒj. Usually has three or four paroxysms a year, but is no longer alarmed. No discoverable signs of organic cardiac disease, and perfectly well otherwise, leading an active life.

I am very much inclined to agree with Dr. Frewen Moor when he says that there is a nervous element in these cases. So there is in allergy. I am almost persuaded that these "salvoes" of extrasystoles have a connexion with allergy, if they are not actually a cardiac manifestation of the condition.—I am, etc.,

H. M. Stanley Turner,
Wing Commander (ret.).

Ashtead, Aug. 3rd.

Liver Treatment of Disseminated Sclerosis

Sir,—During the past twelve years a large number of cases of disseminated sclerosis have been under my care In all these cases the blood count showed that the total white cells were below normal, the total reds were very much down, and it was noted that the percentage of haemoglobin and the colour index were subnormal.

Some four years ago treatment by means of partially cooked liver was commenced, but the patients, after six or seven months of this diet, became so nauseated that this was given up and liver extract substituted, the dose being the equivalent of half a pound of fresh liver daily. After liver treatment for periods of one year or more all the counts approximated or exceeded the normal, especially the total white cell count. The mononuclear leucocyte count, too, was considerably above normal.

I am able to say definitely that 75 per cent. of the cases of disseminated sclerosis in this home which have been taking liver for the last three or four years have exhibited an arrest in the progress of the disease; all of them show a distinct improvement in the general condition, and the patients are most enthusiastic in attributing their improvement in health to the ingestion of liver extract. In my opinion it is essential that these patients should take the equivalent of half a pound of liver daily for the rest of their lives. Patients who go away for, say, six or seven weeks' leave, and do not take their liver treatment, invariably show some retrogression on return. It is thought that electrical treatment, much exercise, and massage are contraindicated in cases of disseminated sclerosis. The early diagnosis of this disease is very difficult, but if it is made, and the patients are given regular doses of liver extract, I believe that this disease will be arrested; the condition will certainly be improved, and it is within the bounds of possibility that cure may be effected.

Apart from comparative blood counts no scientific data have been collected or even sought; the liver treatment has been entirely empirical, but the results have been surprisingly convincing. Further examinations, including blood sedimentation tests, are being carried out, as new cases are admitted, and a more scientific view of the results of this simple line of treatment may be available in the near future. There are to-day fifty-one cases of disseminated sclerosis under my care.—I am, etc.,

Edward Gowlland,
Commandant, Star and Garter Home for Disabled Sailors and Soldiers.

Richmond, Surrey, July 31st.

⁂ An article by Drs. A. Goodall and J. K. Slater of Edinburgh, describing their results in the treatment of five consecutive cases of disseminated sclerosis by means of whole liver, appeared in the *Journal* of May 9th, 1931 (p. 789).—Ed., *B.M.J.*

Views on the Cancer Problem

Sir,—It was with interest that I read the article in the *British Medical Journal* of April 27th by Mr. Lockhart-Mummery on "Modern Views on the Cancer Problem," hoping thereby to get some confirmation of a view that I have held for some twenty to twenty-five years that ultimately the successful treatment of cancer will depend on an increased knowledge of the endocrine system. I was therefore somewhat disappointed to find that no mention was made of this, and in consequence I am prompted to put forward these views in the hope that some benefit may accrue.

Let me first admit that I have never had the opportunity of doing any research work myself, and that the views put forward are, subject to limitations, the logical conclusions drawn from facts more or less generally recognized. Further, I do not claim any priority for such views, though they are independently come by. Put as briefly as possible they are as follows.

It is recognized that the normal growth, differentiation, and control of all the tissues of the body are largely dominated by one or other of the endocrine organs—for example, pituitary, thyroid, sex glands, etc. It is reasonable, therefore, to suppose that if the normal functions of these organs are disturbed the result will be a disturbance in the normal growth and development of the tissues under their control.

My view of malignant disease is one of uncontrolled growth of cells, with a reversion back towards the primitive type; the greater the loss of control the greater the reversion back to the primitive type and the greater the malignancy. This is borne out by the recognized fact that the more malignant a growth is clinically the more primitive and less differentiated is the type of cell present, or, put in the other way, the less malignant a tumour is the more do the cells maintain their special differentiation. A marked example of extreme malignancy is seen in a chorion epithelioma, the cells of which are identical with the most primitive cell—namely, the chorionic epithelium of the early developing ovum. There is an abundance of evidence to show that the implantation, development, and continued growth of the fertilized ovum is under hormonic control, amongst the known hormones being those of ovarian origin and also of the pituitary body.

In following up the line of thought raised by the exact similarity of the cells of a chorion epithelioma with the

cells of the normal chorionic epithelium, we next have to realize that the actual implantation of the fertilized ovum is due to the destructive action of the chorionic epithelium on the uterine mucosa, similar in all respects to the advance of a highly malignant tumour; in fact, if this chorionic activity is allowed to proceed unhindered the result is a chorion epithelioma, one of the most highly malignant growths known. The outstanding feature, to my mind, is that normally this chorionic activity is very accurately controlled, and only allowed to continue far enough to enable the ovum to be properly embedded and so ensure its future nourishment from the maternal tissues.

The question immediately arising out of the recognition of these facts is: "*What is it that controls the activity of the chorionic epithelium and conquers its malignant properties?*" If that question could be answered is it not reasonable to hope that we should have taken a big step forward in our ability to control other malignant growths? I suggest that the controlling power may lie in the decidua itself, sensitized or stimulated by other hormones, such as one or other of the ovarian secretions (corpus luteum or follicular), themselves stimulated by secretions elsewhere—for example, anterior pituitary body—producing probably in its entirety a fairly complicated system. This is obviously merely a suggestion, the accuracy of which can only be ascertained by much research. If, however, there is any truth in the view that the cancer problem is based on an upset of the endocrine function, the same reasoning could be applied to all tumour formation, whether simple or malignant, the degree of development depending on the degree of endocrine upset.

I am not suggesting that all other views regarding this problem are out of the picture, as we should probably find that many of them are definitely linked up, and that, *inter alia*, the genetic theory and quite probably the influence of vitamins would be found to fit into the final picture. What I do suggest, however, is that the influence of the endocrine organs be kept fully in view, and in particular that it would be of tremendous importance if an answer could be obtained to the question: "*What is it that controls the activity of the chorionic epithelium after the implanation of the fertilized ovum in the uterus is completed?*"—I am, etc.,

Napier, New Zealand, June 21st. A. C. B. Biggs.

Recovery after Cardiac Arrest

Sir,—Mr. Neville Young's case of recovery following cardiac arrest, reported in the *Journal* of August 3rd, would appear to be almost an exact replica of the case described by myself.

It is true that cardiac massage was employed in his case, and it is extremely interesting to note that after the second injection of adrenaline the heart was felt to contract slowly into a hard ball. It would be interesting to know whether Mr. Neville Young attributes these contractions to the adrenaline or to the cardiac massage: as this latter procedure always occupies a considerable time, it is questionable whether similar results cannot be obtained by the injection of adrenaline alone.

I am indebted to Dr. C. Langton Hewer for his description of the special needles used by him for cardiac puncture, and would suggest that these special needles should be part of the equipment of every anaesthetic table in operating theatres, as there appeared to be a large and increasing amount of evidence that adrenaline is of very real value in cases of cardiac failure in general anaesthesia.—I am, etc.,

R. A. Grant,

Birkenhead, Aug. 3rd. Medical Superintendent, Birkenhead Municipal Hospital.

Control of Tuberculosis

Sir,—In a letter in the *Journal* of July 27th (p. 186), Dr. Prideaux Selby says that until strict segregation of all positive lung cases is carried out the disease will not die out or be exterminated. Are we to understand that he thinks this can one day be carried out? First, would it not be best to agitate for compulsory hospital treatment for the helpless and dying patients, especially when children are in the house? During the past few years I have often acted as a locumtenent, and from time to time have been horrified at the dangers the young have been exposed to by these poor helpless patients. From a public health point of view much more value would be obtained by legislation such as this than by sending the working man to a sanatorium for a few months and then allowing him to take his discharge with the almost certain knowledge that in the near future he will break down again. Also, after reading the article in the same *Journal* (p. 147) by Drs. Stanley Griffith and Munro on tuberculosis due to bovine tubercle bacilli, one cannot help thinking that more rigid rules should be made for the supply of pasteurized milk, and that it should be made a criminal offence for monthly nurses to give milk that has not been previously pasteurized or boiled to the newly born, especially during the first three days of life.

Better housing, a higher standard of living, more healthy workshops, and less alcoholism have done much to lessen the incidence of tuberculosis. Therefore, for the civilian adult it seems that with the careful education of the infected and general public in the methods to be used by the former to avoid infecting others we should rely on these improvements and hope for more. But for the young and rising generation we should do all in our power to prevent exposure to infection. To abolish all infection is more than we can hope for, but provided it is not supplied in massive doses perhaps this is not altogether a misfortune, as otherwise a future generation might become a highly susceptible community very liable to an epidemic of acute tuberculosis, as has happened in the primitive tribes and elsewhere.—I am, etc.,

Southsea, July 26th. "Unemployed D.P.H."

Paraldehyde as a Pre-anaesthetic

Sir,—During the past few years the barbiturate group for pre-anaesthesia has received a large amount of advertisement to the disadvantage of some of the methods which were employed before its introduction. Having used the more popular barbiturates such as nembutal, hebaral, and evipan to a fair extent, I am sure that I am now able to view them in better perspective since returning to rectal paraldehyde. Not only has this substance been to some extent driven out of use by the barbiturates and their makers, but also by the statements that proctitis has been known to have occurred. Also the smell has been blamed for making this solution unpopular. Proctitis must be an extremely rare complication, as I have not up to now met anyone who has actually seen such an unpleasant sequel. As far as the odour of paraldehyde is concerned, this is never appreciated by the patient, and for this reason it is a criticism of little importance.

I suggest that paraldehyde has the following definite advantages over barbiturates: (1) It is safer for both children and adults. (2) It is more rapid and certain in action. (3) It can be used in "bad risk" cases—decompensated hearts, cachectics, and chronic nephritics. (4) The post-operative state is quieter and the sleep more prolonged. (5) Complete amnesia is obtained and the sleep is refreshing—barbiturates sometimes providing a drunken half-sleep, with dreams and excitement. (6) Failure to remember the anaesthetic can be promised.

The only contraindication is use in the " chest " case. This type of case, however, provides the same problem as far as the barbiturates are concerned.

The technique is very simple. A freshly prepared 10 per cent. solution of paraldehyde in saline is run slowly into the rectum three-quarters of an hour before operation. The dosage is a matter of experience. Overdosage makes the patient so deeply asleep, with such shallow respiration, that induction is made tedious. Underdosage is a fault on the right side, since amnesia seems to occur in the very great majority. The standard dose of 1 drachm of paraldehyde to every stone in weight (with a maximum of 8 drachms) in my experience is overgenerous.

After the operation is completed the remaining solution, if any, can be washed out by a catheter introduced high into the rectum. Olive oil may be then allowed to flow in so as to safeguard the patient against any possible risk of proctitis. Should prolonged post-operative sleep be required the remaining solution may be left undisturbed. In fact, small further doses, dissolved in olive oil, may be run into the rectum every few hours. In this way twenty-four hours of quiet sleep may be ensured without resort to any depressant drugs.

I have found paraldehyde so successful and safe as a pre-anaesthetic that I have relegated the barbiturates to a secondary place. Their value in moderation before dental gas, in the first stage of labour, and as a somnifacient cannot be disputed. Their use in larger dosage has on several occasions given me much anxiety, a state of mind from which I have never suffered after employing paraldehyde.—I am, etc.,

Maidenhead, July 22nd. R. R. Foote.

Infrequent Epileptic Fits

Sir,—Epilepsy is a disease the causation of which is as obscure to-day as it was to Hippocrates, who vividly describes a typical fit. The immensely long intervals that occur between fits are not noticed in the textbooks that I have consulted.

Thirty years ago I was hurriedly called to a drunken publican, aged about 50, and witnessed the termination of a very severe fit. Prolonged investigation proved that there was an interval of twenty-five years since the last attack.

Some eight years ago a City man, aged 48, had a typical early morning fit. His wife remembered that he had had a similar attack " years and years ago." He has had no fit since that time.

Another City man, aged 60, has had fits at many years' interval throughout his life.

I was called last month to a woman, aged 48, at 5.30 a.m. She was just recovering from a typical fit. Her husband, to whom she had been married for thirty years, recalled that the last attack occurred twenty-seven years ago! The woman remembered that she had had fits about her eighteenth year.

A retired colonel, aged 59, fell down in his garden, bruised his back severely, and bit his tongue. Another doctor saw him and described a typical fit to me. He was slightly confused when I saw him an hour later. I have known him intimately for forty years. It was the first attack. He is now very well. His sister (about the same age) fell down and fractured her femur, and two years later fell unconscious in the road!

What can one do for such cases? Bromide and luminal are absurd, as the next fit will probably not occur for years, nor indeed again. I have written this letter as my brethren, generally at least, do not seem to appreciate the immensely long intervals that may divide epileptic seizures, nor that cases do develop at the end of the sixth decade of life.—I am, etc.,

East Sheen, July 28th. Vaughan Pendred.

Shifting Sands of the Architecture of Medicine

Sir,—It would perhaps interest a good many others who, like myself, feel in the dark as to what precisely are " the unchanged fundamental principles enunciated by Hahnemann over a century ago " if the correspondent in the *Journal* of July 27th, from whose letter the above quotation is made, would formulate them very briefly in good plain English.

It would appear to me that Hahnemann's main contention was that there exists in the mineral and vegetable worlds a specific remedy for every symptom group of disease manifested by mankind, disease being looked upon as individual reaction to environmental stress, and the selection of the appropriate remedy therefore limited to the one and only remedy for that individual, which, however, must be administered in dynamic form of the exact formula that the soil, as judged by the individual's constitutional or biological coefficient, will respond to.

The world owes Hahnemann a debt of gratitude for his far-reaching discovery of potentized reagents, although it may deplore the fact that none of those he " proved " on himself appears to have evoked any reaction allied to a sense of humour. " Find the right remedy (not remedies), and you'll cure your man " is a briefer way of summing up his philosophy, and one that no diehard materialist is ever likely to dispute, besides being one that none has yet come forward and claimed, or been proclaimed, as having been able to do consistently with any outstanding measure of success.

The definition of homoeopathy in a *Standard Dictionary of the English Language* as " a system which professes to cure diseases by the administration in minute doses of medicines that would induce them or similar symptoms in healthy persons " seems to me wholly inadequate, and perhaps your correspondent will agree that it requires emendation in the public interest, so that the unenlightened may learn what they are only too anxious to learn—namely, the " unchanged fundamental principles " referred to.—I am, etc.,

London, N.W.8, July 30th. F. A. Hort.

Obituary

M. G. BIGGS, M.D.

Chairman, Central Ethical Committee, British Medical Association, 1913–19

Dr. Moses George Biggs, whose death on July 28th we briefly announced last week, was for many years identified with the local and central work of the British Medical Association, and all his colleagues held him in the highest regard. After studying medicine at University College Hospital, he qualified as M.R.C.S. and L.S.A. in 1871, and in 1898 obtained the M.D. degree of the University of Durham. His first appointment was that of house-surgeon to the Essex and Colchester Hospital, after which he served as house-surgeon to the Salisbury Infirmary for four or five years. He then settled down in general practice in Battersea, where he became surgeon to the Battersea Dispensary, and was afterwards elected president of the South-West London Medical Society. In his early years of practice Dr. Biggs published one or two clinical notes in the *Lancet*, and he was the author of a little book entitled *Hints to Young Nurses*. In 1931 he retired from active work and went to live on the Sussex coast at Rottingdean. The funeral took place at Rottingdean Parish Church, where Dr. Biggs's second wife was buried a few months ago.

Dr. Alfred Cox writes:

The death of Dr. M. G. Biggs at the age of 86 removes one who in his time was a prominent figure in the B.M.A.—though "prominent" is hardly the word Biggs would have used. I think he would have preferred "useful." He was an unassuming man who beneath a placid exterior concealed very strong and decided opinions as to the difference between right and wrong and the highest professional ideals. A typical general practitioner, who for many years was a highly respected figure in the Battersea area, he was one of those busy men who could always make time for work for his profession. And he held very strongly that effective work for the profession meant using the B.M.A. I first met him at Oxford in 1904, when we were both representatives in that anxious, strenuous, and yet joyous time when the Association was undergoing a process of rejuvenation. When I came on the staff I soon found that Biggs was one of the select few on whom we could always rely for a sound opinion, and, what was even more valuable, for active co-operation in his own area. He was the first chairman of the Wandsworth Division (then a particularly active body owing largely to the influence of E. R. Fothergill, who was a member of it at that time) and was a member of Council from 1912 to 1919.

But his chief claim to the gratitude of the Association is his work on the Central Ethical Committee, of which he was a member 1912 to 1920 and chairman from 1913 to 1919. This is a post which requires as much tact and judgement as any in the Association. He was an ideal member and chairman. His respect for detail, his transparent honesty, his long experience, and his deep regard for the best ideals of our profession made him invaluable at a time when the committee was in process of forming that great body of "case-law" which has since been built up. All of us who had the privilege of working with him honoured and loved him, and it was with deep regret that we parted with him when he felt it necessary to retire. He was then over 70, but his judgement was as sound as ever, and his interest in the Association as keen.

It is pleasant to recall that the men with whom, and for whom, Biggs chiefly worked not only felt but showed their appreciation of him. He represented Wandsworth in 1904, again from 1913 to 1919, and again from 1928 to 1930. He was president of the Metropolitan Counties Branch in 1919, and when he retired from practice his colleagues made him a presentation which I well remember gave him deep satisfaction. A fine career of which any doctor might be proud.

Dr. T. H. Gardner writes from Streatham Hill:

Few men have the power to compel such deep affection as dear old Dr. Biggs had. Those of us who had the privilege of his genial presence at the meetings of the Wandsworth Division, of which he was chairman for many years, had the most affectionate regard for him. When he retired from the chairmanship some years ago the Division gave a dinner in his honour, at which Dr. Hawthorne and Dr. Anderson were present, and presented him with a suitably inscribed gold watch. This was largely due to the efforts of Dr. Pollock, who was secretary at the time, and Dr. Shekleton, who had followed Dr. Biggs as chairman. On his retirement from practice four years ago, when he went to live at Rottingdean, many of us felt that we had lost a father. He was the soul of integrity, and I do not think he was capable of doing an unkind action or saying an unkind word of anyone. In spite of his great age his mind was clear and concise, and his words full of wisdom. He was so well informed on all matters concerning the Association that we always looked to him for guidance, and he never failed to direct us in the right way. It was my good fortune to be a representative of the Division with him on three occasions—at Cardiff, at Manchester, and in London—and I always have the happiest memories of his companionship at these meetings. He had been president of the South-West London Medical Society, which meets at the Bolingbroke Hospital, and was also first president of the South-West London Post-Graduate Association. When the members of the latter association paid a visit last year to the Heritage Craft Schools at Chailey Dr. and Mrs. Biggs were invited to join us, and lunched with us at Lewes. It was a real pleasure to see how delighted he was to meet his old friends from South London. We who knew him and so greatly appreciated his sterling qualities will always have the happiest memories of him, and, although he has passed out of sight, the bond of affection will remain with us. The simple service at Rottingdean Church last Thursday, at which Dr. Fothergill, Dr. Carswell, and myself were present, representing the B.M.A. and the societies to which he belonged, was in harmony with his beautiful nature, and such as he would have wished.

Dr. James Smyth writes from Clapham:

The late Dr. Biggs retired from practice at 80 years of age; he was then the second oldest practitioner in the district. He was in active practice in this neighbourhood for over fifty years; he was a man of great personality; had a profound knowledge of medicine; possessed great ability and a very wide sympathy as medical adviser and counsellor. His great hobby in life was his work and the interests of the B.M.A. He possessed and treasured every copy of the *Journal* issued until his retirement.

SAMUEL E. PICKEN, *M.C.*, M.B., B.Ch.

Belfast

We regret to record the death of Dr. S. E. Picken of Belfast, on July 14th, as the result of a heart attack while bathing with his wife at Castlerock, co. Derry, during a week-end holiday. Dr. Picken had almost reached the shore when he disappeared, and his body was recovered in a few minutes in comparatively shallow water. Artificial respiration was carried out by a number of medical friends who were on holiday at Castlerock, but this was unsuccessful, and it is presumed that he was the victim of a cardiac attack, as he was known to be a strong swimmer. The tragic event is accentuated by the fact that Dr. Picken was only married in April last.

Samuel Ernest Picken was the third son of the late Dr. Picken of Randalstown, and at the time of his death was 45 years of age. One of his two brothers, Mr. Andrew Picken, B.A., LL.B., is secretary to Queen's University. He received his early education at the Belfast Royal Academy, and studied medicine at the Queen's University of Belfast, graduating M.B., B.Ch. in June, 1914. He obtained a commission in the R.A.M.C. on the outbreak of war, and was attached to the 10th Royal Inniskilling Fusiliers (Ulster Division), with whom he served throughout the campaign. He was awarded the Military Cross, was twice mentioned in dispatches, and attained the rank of major. He served with the Army of Occupation, and finally severed his connexion with the Army in 1920 to take up general practice. Latterly he had acted as medical referee to the Ministry of Labour. An earnestness of purpose associated with an unassuming manner endeared "Sammy Picken" to all who knew him, and many will miss his unobtrusive

personality and friendly sportsmanship. The demands of active service called forth the best of his characteristics, and there his courage, his industry, and his conscientiousness in the face of danger or in the presence of fatigue was the subject of comment by all who knew him, either as brother officers or in the ranks. One who saw much service with him in France writes:

When I joined them (the 10th R.I.F.) I found that Dr. S. E. Picken, in spite of his youth and inexperience, had established himself as a very efficient medical officer, and had identified himself heart and soul with the battalion, which he served so faithfully till the end of the war. We have often seen him with absorbed and pitying face, skilful hands, and infinite patience, spending hours in trying to make the waiting easier for some tortured soul. Many to-day, looking at their visible scars, will bless Sammy Picken for smoothing the first hours of shock and pain, and for seeing that they were sent back with all speed to quieter regions. Sammy was a battalion M.O., a front line doctor, during all his time in France. It was his own choice. . . . I remember a dressing station, with a wooden cross at the entrance marking the grave of the previous medical officer, a distinguished V.C. with bar, and a "pill box" in the salient swimming with water, shelled night and day—a death trap, because from our point of view the door was turned the wrong way. These were some of the residences which Dr. Picken had to occupy in the performance of a duty he never shirked. He did not talk much, but he had a keen sense of humour, which made him a delightful companion. He rejoiced in the quaint sayings and extraordinary actions of his men, and he was in his glory when a "rag" was in progress, and was ever ready to lend a helping hand. When Sam Picken was promoted, when he was mentioned in dispatches, when he was decorated, there was no doubt about the approval of all who knew him. We felt no honour could repay him for what he had done for all of us, and indeed the honour he valued most was the enduring place which he held in the hearts of thousands of men. That he should have earned such a reputation for courage in a battalion that was noted all over the Western Front for its dash, its reckless bravery, its grim determination to do or die, speaks for itself.

W. HOWARD JONES, M.B., B.S.

Anaesthetist and Lecturer on Anaesthetics, Charing Cross Hospital

The sudden death, on July 26th, of Dr. W. Howard Jones, the well-known London anaesthetist, was briefly announced in last week's *Journal*.

William Howard Jones was born in 1881, and received his medical education in Manchester and at St. Bartholomew's Hospital, obtaining the English Conjoint diplomas in 1906 and the M.B., B.S. degrees of the University of London in 1913. For some years he was anaesthetist to the Metropolitan Hospital and to St. Mark's Hospital, and during the war he was a member of the visiting staff of the King George Military Hospital. At the time of his death he was honorary surgeon-anaesthetist at Charing Cross Hospital and lecturer on anaesthetics in the medical school; senior anaesthetist to the National Temperance Hospital in Hampstead Road; and anaesthetist to the Royal Ear Hospital, the Royal National Orthopaedic Hospital, and the Gordon Hospital for Diseases of the Rectum. He had long been an active member of the Anaesthetic Section of the Royal Society of Medicine, and was honorary secretary of the Association of Anaesthetists.

Dr. Howard Jones joined the British Medical Association in 1911, and at the Bournemouth Meeting last year was vice-president of the Section of Anaesthetics. Several papers by him appeared in the *Proceedings of the Royal Society of Medicine*; in particular, one on the use of chloroform and the abuse of ether, and another on percaine as a regional and spinal analgesic with special reference to high thoracic nerve root block. He also contributed articles on tracheal insufflation and intubation inhalation to the *Lancet*, and on spinal analgesia to the *British Journal of Anaesthesia*.

Mr. NORMAN C. LAKE sends the following appreciation:

The passing of Howard Jones deserves more than an ordinary obituary notice, for his death is one which can be said in truth to be a real loss to medicine. His contributions to our knowledge of spinal anaesthesia and its technique are so well known that it would be redundant to refer to them.

It was my very great privilege to co-operate, in some small way, with him during the preliminary work which led to his introduction of spinal anaesthesia with hypobaric large-bulk solutions of very dilute percaine, and of my many interesting and pleasant memories of that period the one that stands out most distinctly is the unerring way in which his instincts and experience directed him to a correct solution of the many problems which arose in connexion with the work. The method is now so well known and universally used that it seems impossible to believe that only six years ago Jones was bemoaning the fact that there was then no chemical known sufficiently powerfully anaesthetic to allow of its use in hypobaric solutions without the addition of levitating agents. I mention this to show that the idea underlying the method was already present in his mind before he knew of percaine.

His skill as an anaesthetist was, however, by no means limited to spinal administrations, but extended to all the many varieties of modern anaesthesia. Never once over the long period that he was associated with me did I have a moment's anxiety from the anaesthetic point of view—a wonderful record for over three thousand administrations, of which some six or seven hundred were high spinals administered by his own method. Rumours that the results of his method were not as good as had been stated were of course entirely without foundation. This is not the time to enter into a discussion of anaesthetic methods, but the truth is that in the long series mentioned above there was no fatality, no anxiety, and only two failures, due (as he himself was the first to acknowledge) to faulty technique. Such results indicate a skill of a very high order, and, in consequence, his services were in great demand from doctors and surgeons when they themselves had to undergo severe abdominal operations, and there can be no surer test of a man's real ability.

Of his personality much might be written, for it was a very well-marked and pleasant one. Anaesthesia in all its aspects was his main interest, and nothing gave him greater pleasure than to discuss his methods with the many distinguished visitors from all parts of the world who came to learn his technique. His interests, however, extended to many other subjects, including engineering, especially as applied to the construction of anaesthetic apparatus. He had a very complete workshop in his house in which he constructed a good deal of the apparatus which he used. His death has deprived medicine of a very original thinker, a wonderful technician, and a well-beloved man, a loss which it can ill afford.

The following well-known foreign medical men have recently died: Professor HUGO DE VRIES, founder of the theory of mutation, at Amsterdam, aged 87; Dr. GERMAIN ROQUE, honorary professor of clinical medicine at the Lyons Faculty of Medicine; Dr. PHILIPPE TISSIÉ, a pioneer of physical culture in France; Dr. F. LÜTZHÖFT, an eminent physician and medical historian of Copenhagen, aged 77; and Professor FRANCESCO CAMPIONE, director of the School of Obstetrics and Gynaecology at Bari.

Universities and Colleges

UNIVERSITY OF OXFORD

At a congregation held on August 3rd the following medical degrees were conferred:

B.M.—A. H. Hunt, T. W. H. Porter, A. Fearnley, K. C. Royes, N. E. R. Archer.

UNIVERSITY OF CAMBRIDGE

The John Lucas Walker Studentship for original research in pathology, valued at £300 a year for three years, has been awarded to Mrs. Muriel Elaine Adair, Ph.D., of Girton College. The Gwynaeth Pretty Studentship for the encouragement of research in the aetiology, pathology, or treatment of disease, valued at £200 a year for three years, has been awarded to R. Passmore, B.M., of Brasenose College, Oxford, to whom also the Nita King Research Scholarship for original research in the aetiology, pathology, and prevention of fevers, valued at £58 a year for three years, has been awarded.

UNIVERSITY OF LONDON

The following have been recognized as teachers of the University in the subjects indicated in parentheses:

St. Bartholomew's Hospital Medical College: Dr. E. P. Cumberbatch (Physical Medicine).

St. Mary's Hospital Medical School: Dr. D. H. Brinton (Neurology); Dr. W. D. W. Brooks (Medicine); Dr. G. B. M. Heggs (Dermatology).

At a meeting of the Senate on July 17th it was reported that Professor A. E. Boycott had resigned the Graham Chair of Pathology at University College Hospital Medical School owing to ill-health.

A grant of £25 has been made out of the Thomas Smythe Hughes Medical Research Fund and the Beaverbrook Fund for the year 1935–6 to Dr. H. F. Rosenberg for apparatus and animals for an oscillographic investigation of electrotonic and action potentials in nerve, the research to be carried out at the Physiology Department of London Hospital Medical College.

The Senate resolved that the list of subjects in which teachers in the Faculty of Medicine may be recognized be amended by the addition of the subject "Physical Medicine."

The regulations regarding exemption from the second Examination for Medical Degrees, Part I, for internal students (*Red Book*, 1934–5, p. 203), were amended by the substitution for paragraph 3 (ii) of the following:

Students who have passed as internal students the B.Sc. (Special) Examination in Chemistry, or the B.Sc. (General) Examination with Chemistry, will be exempted from the course of study for the Second Examination for Medical Degrees, Part I, and from that Examination.

The regulations for the M.D. Examination, Branch V (Hygiene), for internal students (*Red Book*, 1934–5, p. 225), were amended as follows:

(1) By the addition of the words "unless specially exempted under Clause A below" after the word "previously" in the second paragraph under the heading "Branch V, Hygiene."

(2) By the addition of the following after the third paragraph under the heading "Branch V, Hygiene":

A. Candidates who have *either*

(i) Taken the M.B., B.S. degrees with honours in medicine, pathology, or forensic medicine and hygiene; or

(ii) Subsequently to taking the M.B., B.S. degrees conducted a piece of original work approved for the purpose by the University; or

(iii) Subsequently to taking the M.B., B.S. degrees had such exceptional experience in the branch in which they present themselves as may be approved by the University;

may present themselves for the M.D. Examination after an interval of one year only from the time of taking the M.B., B.S. degrees, provided that they comply in other respects with the conditions stated in the preceding paragraphs.

It was resolved that in and after 1936 the regulations regarding admission to the Third Examination for Medical Degrees (*Red Book*, 1934–5, p. 216; *Blue Book*, September, 1934, p. 259) be amended by the addition of the following footnote:

"Candidates who pass the Second Examination for Medical Degrees, Part II, in July of any year will be permitted to enter for the Third Examination for Medical Degrees in May three years later, provided that they have completed the required hospital and clinical appointments."

The regulations relating to exemption from the Second Examination for Medical Degrees, Part I (*Blue Book*, September, 1934, p. 246) were amended for examinations in and after 1936 by the deletion of paragraph 3 and the substitution therefor of the following:

External Students who have passed the B.Sc. Special Examination in Chemistry, the B.Sc. Special Examination with Chemistry as their subsidiary subject, or the B.Sc. General Examination with Chemistry, will be exempted from the Second Examination for Medical Degrees, Part I.

M. P. Ellis, M.D., F.R.C.S., has been re-elected to the Duveen Studentship for a further year.

UNIVERSITY OF BRISTOL

A. C. Fisher has been approved by the Board of Examiners for the degree of M.D.

Medical Notes in Parliament

[From our Parliamentary Correspondent]

In the House of Lords on Friday, August 2nd, the Royal Assent was given to ninety-three Acts. These included the India Bill, the University of Durham Bill, the Housing Bill, the Scottish Housing Bill, the British Sugar (Subsidy) Bill, the National Health Insurance Bill, the Restriction of Ribbon Development Bill, four Ministry of Health Provisional Order Confirmation Bills relating to various hospitals, the West Riding of Yorkshire Mental Hospitals Board (Superannuation) Bill, and St. Bartholomew's Hospital Bill.

The Voluntary Hospitals (Paying Patients) Bill was read a second time without debate in the House of Commons on July 31st. It has been sent to Standing Committee C, and there is a strong expectation that it will pass into law after the recess. It has already passed the House of Lords.

The Hours of Employment (Conventions) Bill was brought from the Lords on July 25th and received a first reading in the Commons. It proposes to implement draft International Conventions relating to the employment of women during the night and to hours of work in automatic sheet-glass works, and to amend the law relating to the hours of employment of women holding responsible positions of management who are not ordinarily engaged in manual work. The Bill will apply, with modifications, to Northern Ireland. The Night Work (Women) Convention (Revised), 1934, which the Bill is to implement, provides (Article 3) that: "Women without distinction of age shall not be employed during the night in any public or private industrial undertaking, or in any branch thereof, other than an undertaking in which only members of the same family are engaged." The competent authority in each country is to define the line which separates industry from commerce and agriculture. This convention does not apply to women in responsible positions as defined above.

A Bill to make provision for the employment of women and young persons in factories and workshops on a system of shifts was presented by Sir John Simon in the Commons on July 31st, and was read a first time.

The Voluntary Hospitals (Paying Patients) Bill had been on the order paper of the House of Commons for some time awaiting second reading after passing the House of Lords. Up to July 30th progress had not been made with it. A Lobby report asserted that the British Medical Association desired a further drafting amendment in the Bill.

B.M.A. Report on Alcohol and Road Accidents

On July 31st Sir Francis Fremantle asked whether the Minister of Transport had considered the report of the committee of the British Medical Association on the influence of

alcohol on motor driving; whether he would issue the report for the use of Members of Parliament; and what action he proposed to take in the matter. Mr. HORE-BELISHA replied that this report was issued in the *British Medical Journal* for July 27th, and was therefore generally available. The report did not itself suggest to him any definite line of action, but the public would be grateful to the British Medical Association for the time and trouble it had taken in carrying out this inquiry, and for the interesting material which the report contained. Mr. ISAAC FOOT asked, in view of the fact that the Minister of Transport obtained this report following upon a promise which he gave in the House, if he did not now think that it should be generally available. Mr. HORE-BELISHA said the report was published in the *Journal*, and could be obtained by anybody. If there were any general demand for it in the House, and members had not found it possible to obtain a copy, he would willingly reconsider the question.

On the motion for the adjournment of the House of Commons on Friday (August 2nd), Mr. FOOT again raised the question of the British Medical Association Committee's report on the effects of alcohol on car drivers. Mr. Foot's chief point was that the facts disclosed by the report should be made known to as wide a public as possible. He argued that they should be made known to every judge, magistrate, and police officer and every driver of a car. "The report," declared Mr. Foot, "was intended to be published by those who gave their time to it. They themselves drew attention to the necessity of public attention being aroused. The report was not meant for doctors. Probably the one class in this country who need this report less than the rest are the doctors, because they are best qualified to know about these things. It is not a report written by doctors for doctors. It is a report affecting practically every family in this land inasmuch as everyone has to use the roads, and it is generally the pedestrian who suffers, and seeing that the report has so far been only issued in the *British Medical Journal* I suggest that it should be more widely published." Mr. Foot added that he was sure the British Medical Association had not expected that their report would be put on one side. It was not the way to express thanks to them.

Mr. LOVAT FRASER said that last year in Great Britain 2,016 drivers of motor vehicles were certified by doctors to be under the influence of drink. There must have been many others who were not certified. To reduce that large number ought to be the object of the Minister of Transport.

Captain AUSTIN HUDSON, the Parliamentary Secretary of the Ministry of Transport, at once agreed that the more publicity the report obtained the better the effect would be. He reminded Mr. Foot that the Highway Code, which had a circulation of 14,000,000, contained a special warning about alcohol. Rejecting the proposal that the Government should publish the B.M.A. Report, Captain Hudson said: "The report has been issued in the *British Medical Journal*, which is the official journal of the British Medical Association. That report is on sale, and reprints can be obtained by anybody interested if they wish for them. Generally speaking, a Government Department does not issue reports of this kind unless there is a general demand from the House, and we have seen no such demand. We really fail to see, when a report is published from one source and can be obtained from that source, why we should ask the taxpayers of this country to publish it again." He added that the Ministry had done its best to get the report publicity in the daily press. Turning to the report itself Captain Hudson said it had been studied with great care. Did Mr. Foot suggest that only a certified teetotaller should be allowed to drive? He himself did not think that total prohibition would ever commend itself to this country, particularly after certain experiments in that direction in other countries. But the Ministry was studying the problem, and might have to take action, as it had to take action in regard to fatigue in the case of drivers of heavy motor vehicles. Much the same effect in the direction of blunting the faculties took place from fatigue as from too much alcohol. People in this country were becoming more sober by education and by the force of public opinion, and that was the right line on which to go. The report suggested no line of action. If the committee had felt that they could usefully make any such suggestion nothing in the terms of reference would have prevented them from doing so.

Hertfordshire County Council Bill

Scrutiny of the Hertfordshire County Council Bill, as passed by the Commons, shows that the provisions regarding inspection and control of medical practitioners, masseurs, and chiropodists, to which Dr. O'Donovan lately took exception, have been withdrawn.

Work of the Mines Department

Presenting the Estimates for the Mines Department on July 24th, Captain CROOKSHANK said that department and the Home Office were co-operating to get the best respirator for factories and mines, and also to ascertain the efficiency of a method of laying dust after shot firing. For silicosis the Medical Research Council had a research committee which dealt with causation and diagnosis. The Home Office dealt with compensation problems, and the Mines Department with prevention. Last October the statutory scheme for compensation for silicosis was extended to all mine-workers underground, and in March to cover all underground workers in the haematite mines. One official of the Mines Department spent his whole time on the problem of preventing silicosis, a baffling problem, particularly in South Wales. In that district silicosis appeared on the increase, although there was no history of abnormal exposure to silica dust. Both the Mines Department and the Home Office were represented on the inquiry by the Committee of the Privy Council about research into silicosis. With regard to nystagmus, the number of new cases dropped every year. Between 1929 and 1933 the drop was 40 per cent. The average number of men employed underground decreased 19 per cent. Nystagmus had been considered due largely to bad lighting. Lighting regulations issued last year prescribed that workers at the coal face must have lamps with a minimum standard of lighting performance. Use of these lamps started on September 1st last, and a complete change-over had to take place by the end of 1936. Excuses for delay thereafter would not be accepted. From last July the area in mines in which mains lighting was permissible was extended, subject to safety precautions. He was disappointed that little had been done. Whitewashing had been rapidly dealt with, and would help to solve the nystagmus problem and to avert accidents. Last year 2,123 mines were at work in the United Kingdom. There were 17,566 inspections underground and 5,601 on the surface. Fatal accidents for the year 1934, including 265 at Gresford, were 1,073, and "three-day" accidents were 132,859. In the first six months of 1935 there were 399 fatal accidents. Many of these accidents might have been avoided. Scratches were ignored which led to septicaemia. Momentary lack of concentration by men accustomed to doing a dangerous job was another cause against which it might be possible to guard. Safety propaganda addressed to boys had begun in 1931 and spread enormously. Last year instruction was given at 261 centres. The response in South Wales was bad, and the classes had to be discontinued. Most of the time of one divisional inspector of mines and all the time of a junior inspector was devoted to work on the avoidance of accidents. Recent regulations required that in every safety-lamp mine the management must provide sufficient fire-damp detectors of approved type. Provision of these was not to be a substitute for the statutory examinations.

Mr. Tom Smith suggested that less speed and rush at the coal face would reduce the accident rate underground. Good protective equipment—caps and boots—was now available, and the colliery owners should provide it to all men and lads who required it.

After debate the Estimate was carried by 332 to 55.

Compulsory Vaccination

Mr. GROVES asked on July 25th if the Minister of Health was prepared to introduce legislation repealing the present Act of Parliament imposing compulsory vaccination upon infants provided the Minister retained or obtained power to order vaccination or revaccination in times of emergency, as recommended on numerous occasions by members of the British Medical Association. Sir KINGSLEY WOOD, in reply,

said he could not give any undertaking at present as to introduction of legislation on the subject of vaccination. In a supplementary question Mr. GROVES asserted that 60 per cent. of parents made formal application for exemption from vaccination. Sir FRANCIS FREMANTLE asked whether Sir Kingsley Wood had initiated investigations, especially by bodies like the Medical Research Council, into the possibility of an alternative to the present vaccination law.

No answer was returned.

Health Services in the Colonies

The Colonial Estimates were debated on report on July 25th. In his general survey Mr. MALCOLM MACDONALD said that during the worst time of the economic depression the development had to be severely restricted in the medical and health services for the peoples of the Colonies, Protectorates, and Mandated Territories. Now budgets were more balanced the Colonial Office was able and must develop those services. Improvement had not gone far enough, but in the estimates for medical and health services on the Gold Coast for 1935 there was an increase of 4 per cent. over the vote for 1934. In Uganda the increase was 7 per cent., and in Palestine 25 per cent. There was need for improved maternity and child welfare services in many Colonies, and improvements had already taken place. In the Gold Coast, with the help of the local branch of the Red Cross Society, the administration had been able to establish more clinics. The maternal hospital at Accra had been extended. In Nigeria during the last twelve months new welfare centres had been started and new dispensaries and hospitals established, partly with native staffs. Hong-Kong and Uganda had been able to establish new welfare centres for treatment of maternal and child cases. One of the most effective ways of bringing the medical services into contact with large native populations was to enlist the help of natives who themselves were trained to take a part in the medical and health services. That training took place in medical training institutions, and there had been an expansion of some of these institutions during the last twelve months. In the institution which had existed for some time in Ceylon expansion had taken place by the recruitment of additional numbers to the staff, so that they could train at any given time an increased number of medical students. In Nigeria they had not got an old-established institution, but were developing these services for training natives in medical work by expanding the medical course given there. Arrangements had now been made in Nigeria whereby natives would get full professional qualifications.

The Ministry was spending more money on medical research into yellow fever, malaria, sleeping sickness, and other diseases where they were endemic.

The report of the vote was carried by 310 to 76.

Grants for Medical Research

Sir KINGSLEY WOOD, answering Mr. Mabane on July 25th, said he had no general responsibility for allocation and administration of Government grants in aid of medical research. He learnt from the Medical Research Council that research into the cause and prevention of the common cold was proceeding in a number of directions, and was not hampered by lack of financial resources.

Nystagmus and Workmen's Compensation Act: Inquiry Committee

Sir JOHN SIMON announced, on August 1st, that Judge Stewart had consented to act as chairman of the committee appointed to inquire into the operation of the Workmen's Compensation Act in relation to miners' nystagmus; the position of the medical referees under the Act, and the arrangements generally for dealing with medical issues; and certain important questions arising in connexion with the settlement of claims by payment of lump sums.

Terms of Reference

The terms of reference of the inquiry are:

(i) To inquire into the operation of the Workmen's Compensation Acts (including any Orders or Regulations made thereunder) in relation to workmen affected by miners' nystagmus, and to make any recommendations whether by way of amendment of the law or otherwise as, having regard to the special character or effects of the disease or any special circumstances connected therewith, they may think desirable.

(ii) To inquire into the system of medical examination and certification by the medical referees and the certifying surgeons in force under the Workmen's Compensation Acts, and generally into the present procedure and arrangements, in cases of injury by accident or through one of the scheduled diseases, for ascertaining and supervising the physical condition of the injured workman and his fitness for employment, and to make any recommendation for alteration of such procedure or arrangements as they may think fit.

(iii) To inquire into and report on the working of the provisions and practice relating to the settlement of workmen's compensation claims by agreements for the payment of lump sums and to advise on the following points in particular:

(*a*) As to the effects of such provisions and practice in promoting or retarding the recovery of the injured workman and as to whether any alteration therein is desirable;

(*b*) As to the manner in which the amount of the lump sum is calculated and as to whether rules could not usefully be formulated, whether for guidance only or for compulsory application, for the purpose of fixing or assisting to fix the amount in cases of serious and permanent injury;

(*c*) As to the extent to which the workman derives the full benefit of the compensation when paid in a lump sum and as to whether it would be desirable that any, and if so what, further powers should be conferred on the county court to control the use of the compensation in all or any class of such cases.

War Disability Claims

On July 29th Mr. MABANE asked the Minister of Pensions if he was aware that many soldiers of the great war were now beginning to suffer from ailments or were experiencing recurrences or after-effects of ailments or wounds sustained in the war, or were dying prematurely, and that in many cases it was not possible to establish an incontrovertible medical history to relate present ailments or premature death to war service. Mr. R. S. HUDSON replied that the late claims now being received, which were diminishing in number, were not determined on evidence amounting to legal proof or the absence of it, as Mr. Mabane would appear to imagine. Each case was decided on its merits in the light of all the evidence available, and frequently after consultation with outside specialists of eminence. The suggestion of Mr. Mabane that non-medical bodies of ordinary citizens should be appointed to decide on cases where there was a conflict of medical testimony was neither necessary nor practicable. Mr. R. S. HUDSON, on July 29th, informed Mr. Smedley Crooke that he could not consider recommending such alterations in the King's Royal Warrant as would abolish the seven years' time limit in cases where the disability of men who served in the war was proved to be due to war service. The Government was satisfied that the existing arrangements for the award of compensation due to the comparatively few cases of fresh claims for disablement now arising were preferable in the interests of ex-service men and of public administration.

Answering supplementary questions, Mr. HUDSON said six out of seven claims submitted had been granted. In any serious difficulty the case was submitted for the advice of an outside professional expert nominated by the President of the Royal College of Physicians or by the President of the Royal College of Surgeons. In every case the advice of that independent expert had been taken by the Ministry of Pensions. Mr. GUY asked whether more extended use would be made of independent medical experts, because in Scotland only two cases were so referred last year. Mr. Hudson did not answer this. Mr. FETHERICK asked if a case could be further considered when, after an appeal had been rejected, a piece of shrapnel had emerged from a man's head. Mr. HUDSON said the Department was always ready to consider new evidence brought on behalf of a man.

Respirators for Civilian Population

Mr. MORGAN JONES asked, on August 1st, whether the gas mask advised by the Government for use by the civilian population would be able to resist the action of suffocating vesicant and corrosive gases; for how long the masks would offer protection in use; and whether materials were available for the making of such gas masks in quantities for the whole civilian population, with quantities sufficient to allow for reserves and for deterioration and damage.

Captain Euan Wallace replied that the Government would only recommend the use of respirators that would afford protection against all known forms of gas which it would be practicable to use in war, for periods believed to be sufficient for the wearers to reach safety. Persons who might have to remain at work in gassed areas would need respirators giving a longer period of protection. It was not at present possible to quote precise figures of the duration of protection of different types of respirators. There was no reason to anticipate any difficulty in the supply of materials for the full number of respirators required.

Health Conditions in Hopfields

Sir Kingsley Wood told Sir Percy Harris on August 1st that his attention had been called to the report of the medical officer who visited the West Kent hopfields last year and inspected the camps. He did not consider that there would be any advantage in publishing this report, and he was not aware that any extracts from it had been quoted in the report of the local medical officer of health. After consideration of the report of its medical officer the Ministry addressed appropriate communications to the local authorities concerned, with whom it rested to secure proper conditions for the hop-pickers. Sir Kingsley added that he had arranged for one of the medical officers of his Department to visit some of the hopfields in Kent again this year, both before and after the arrival of the hop-pickers. He was also arranging for another of the medical officers to visit some of the hopfields in Worcestershire and Herefordshire.

Health in Offices

Captain Wallace is not at present able to make a statement about legislation for amendment of the Factory Acts. The position of offices in relation to provisions of the existing Public Health Acts is under consideration, but Captain Wallace doubts whether legislation of the character of the Factory Acts would be appropriate to offices.

District Medical Officer Appointments.—On July 25th Dr. O'Donovan asked if the Minister of Health knew that the last appointment of a medical officer for the Accrington No. 2 district was not made in accordance with Section 160 of the Public Assistance Order, 1930, which governed the residential qualifications of the district medical officer appointed. Sir Kingsley Wood replied that Article 160 of the Public Assistance Order, 1930, empowered the county council in any particular case to depart for special reasons from the requirement that a district medical officer should reside within the district assigned to him.

Sick Leave of Civil Servants.—On July 29th Mr. Duff Cooper informed Mr. H. Williams that statistics relating to the sick absences of some 50,000 established non-industrial Civil Servants in certain large Government departments, other than the Post Office, indicated that the average number of days sick leave per annum taken by men and women during the years 1932, 1933, and 1934 was: men (disabled), 11.8; men (others), 8.6; women, 12.9. Corresponding figures for the Post Office, relating to about 160,000 established persons, were: men (disabled), 15.1; men (others), 10.7; women, 12.2.

Paratyphoid in Essex.—Answering Mr. Thorne on August 1st, Sir Kingsley Wood said twenty-one cases of paratyphoid were notified in the urban districts of Grays Thurrock, Purfleet, and Tilbury, and the rural district of Orsett, in the six weeks ending July 27th. The outbreak had been under investigation by the medical officer of health, and a visit had been paid by a medical officer of the Ministry of Health. All cases were promptly isolated and routine disinfection carried out. The cause of the outbreak had not yet been determined, but investigations were in progress.

School Meals and the Means Test.—Replying, on August 1st, to a discussion about the provision of school children's meals, Colonel Muirhead said since March only thirty cases had been reported of children being withdrawn from school meals because that provision was taken into consideration in assessing the means of their unemployed parents. The Unemployment Assistance Board and the Board of Education were consulting on the matter. Complete reports had been called for, but were not yet in hand.

Diphtheria in Liverpool.—Asked about diphtheria cases occurring in Liverpool during the last seven years, Sir Kingsley Wood, on August 1st, circulated the following information supplied by the local authority: Number of children under 10 years inoculated from 1928 to 1934 inclusive, 19,504; number of cases of diphtheria occurring in those children, 60; number of fatal cases, 4.

District Welfare Organization.—The Miners' Welfare Committee is approaching the various district committees with a view to separate surveys being made of the welfare facilities available in each district. A welfare organizer has recently been appointed for Northumberland, who will begin a survey of that district shortly.

Medical News

Dr. Griffith Evans, the Welsh medical and veterinary centenarian, to whose pioneer work in tropical pathology reference is made at page 274, celebrated his hundredth birthday at Bryn Kynallt, Bangor, on Wednesday, August 7th. Telegrams of congratulation were received by him from the King and Queen and the Prince of Wales, and Sir Frederick Hobday brought a scroll from the Royal Veterinary College signed by its president the Duke of Gloucester. Dr. Evans has been a member of the British Medical Association since 1874.

The National Baby Week Council (117, Piccadilly, W.1) is offering challenge trophies for propaganda: (*a*) The "Astor (1931)" and "Kettering" shields for the best propaganda on the welfare of the child from 2 to 5 years of age; (*b*) The "William Hardy" Challenge Shield and the "Gwen Geffen" Rose Bowl to women's institutes for the best scheme of maternity and child welfare propaganda for a rural area.

The prize distribution and conversazione of the Royal Dental Hospital of London School of Dental Surgery will be held at the hospital, 32, Leicester Square, W.C., on Friday, October 4th, at 8 p.m., when Sir Francis Dyke Acland, chairman of the Dental Board, will preside.

The American Chemical Society will hold its Californian meeting from August 19th to 23rd at San Francisco. On August 20th the Division of Biological Chemistry will combine with the Divisions of Agricultural and Food Chemistry and of Medicinal Chemistry for two sessions, the first being on elements required in small amounts in animal nutrition, and the second on vitamins. A further symposium, on proteins and amino-acids, will be held on August 21st.

A series of post-graduate lectures on tuberculosis will be given in the lecture theatre at King's College Hospital Medical School, on Thursdays at 9 p.m., from October 3rd to December 12th, both dates inclusive. The following is a detailed list of the lectures: October 3rd, Dr. J. L. Livingstone, diagnosis of early tuberculosis; October 10th, Dr. Wilfrid Sheldon, tuberculosis in children; October 17th, Dr. R. R. Trail, sanatorium treatment of tuberculosis; October 24th, Mr. J. B. Hunter, surgical treatment of pulmonary tuberculosis; October 31st, Dr. William Brand, the public health aspect of tuberculosis; November 7th, Dr. Hugh Davies, radiographic types of pulmonary tuberculosis; November 14th, Mr. St. J. D. Buxton, tubercle of bones and joints; November 21st, Mr. John Everidge, genito-urinary tuberculosis; November 28th, Mr. V. E. Negus, tuberculosis of ear, nose, and throat; December 5th, Mr. E. G. Muir, visceral tuberculosis; December 12th, Dr. E. Mapother, the psychology of the tuberculous patient. The lectures are free to all medical practitioners and to final-year students of King's College Hospital.

The forty-second Italian Congress of Surgery will be held at Bologna under the presidency of Professor Raffaele Paolucci from October 21st to 24th, when the following subjects will be discussed: cysts and tumours of the lung, and thrombosis, embolism, and mediastinitis, in conjunction with the Italian Society of Internal Medicine.

An international introductory course on homoeopathy is being organized by the Berlin Academy for Post-Graduate Medical Training from October 14th to November 9th in Berlin ; fee 75 marks (40 marks for surgical assistant). During the course drugs will be tested on healthy persons. Those taking part will also be afforded facilities by the Association of Homoeopathic Physicians and the University Polyclinic. For detailed programmes application should be made to the Geschäftsstelle der Berliner Akademie für ärztliche Fortbildung, 7, Robert Koch Platz (Kaiserin Friedrich-Haus), Berlin, N.W.7.

The International Union against the Venereal Peril and the International League of Red Cross Societies have decided to hold an international maritime conference to study the questions relating to the prophylaxis and treatment of venereal diseases among trading seamen. The Geneva conference will be preceded by preparatory national conferences in each country.

The annual meeting of the council of the National Institute for the Deaf was held on July 30th at the new headquarters, 105, Gower Street, W.C. In the absence of Lord Charnwood, the president, Mr. M. Birley took the chair. The report for the past year recorded a further period of rapid expansion of work among the deaf. Satisfaction was expressed that the work of school medical services, infant welfare clinics, and special hospitals was reducing the incidence of acquired deafness among school children. The report also warned deaf persons against quacks, and advised them to seek medical assistance before purchasing aids to hearing. A list of approved firms who supply aids is kept at the institute.

The international Florence Nightingale medal has been awarded to Frau Friederike Zehetner of the Wilhelmina Hospital, Vienna.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

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All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

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The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin* ; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh* ; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Car Sickness in Children

Dr. A. Hawkyard (Leeds) writes: I should like to thank the members of the B.M.A. who kindly answered my query about motor car sickness. My patient obtained most benefit from tablets called "White Wings," made in Ipswich, the composition, stated on the box, being natrii brom. 0.389 gram, hyoscin. hydrobrom. 0.216 mg.

Dr. Sidney Matthews (Crawley) writes in reply to "H. V." with reference to car sickness: (1) Sit in front of car ; (2) take small dose of chloretone before starting and repeat during journey if necessary.

Dr. W. E. Boyd (Glasgow) writes in reply to "H. V." (July 27th, p. 193): The symptomatology produced by cocculus suggests that it might prove of help. One powder of this drug in the 200 potency given prior to the journey, combined with glucose barley sugar during the journey, has helped many of my small patients and my own children. Nelson (Duke Street, Grosvenor Square, London, W.) supply it.

Treatment of Tapeworm

Dr. S. P. Wilson (Wakefield) writes to suggest that "J. R. F. P." (August 3rd, p. 242) might like to try the method described by Dr. P. W. Philip in the *Journal* of March 9th, 1935 (p. 514)—namely, administering chloroform in simple syrup, followed by castor oil.

Income Tax

Replacements

"R. L." replaced five broken electric-light brackets in his surgery with new ones, and replaced the coal-fire grate by an anthracite stove—the grate needed repairing. The inspector of taxes claims that the expenditure represents alterations or improvements, and is not allowable.

*** The inspector is correct, but only as regards that part of the total expenditure which would exceed (*a*) the cost of replacing the brackets with similar ones plus (*b*) the cost of repairing the grate. That expenditure is, as it were, embedded in the total cost, and is allowable as being incurred on replacements and repairs.

LETTERS, NOTES, ETC.

Preventive Medicine Up to Date

"H. E. G." writes: In this age of preventive medicine the following drama shows the attitude of the education authorities. *Act 1:* A girl attending the village school develops mumps. I give a certificate stating that her brother should be in quarantine, and should stay away from the county school, which he is attending. *Act 2:* His head master sends a note to the effect that the education mandarins care for none of these precautions, and that the boy should return to school. *Act 3:* My winged words on this attitude are evidently repeated, and not only wring the withers of the schoolmaster, but call forth a long explanation from the school medical officer, of which the gist, reading between the lines, is that the record of attendances and the money grants in connexion are of more account than the health of the community. *Act 4:* The brother develops mumps, having in all probability infected some of his schoolfellows, who would otherwise have escaped. The last laugh is certainly with me, and this only shows that sometimes that despised animal, the G.P., has more *vous* than the pundits in Government departments.

A Question of Nomenclature

Dr. James C. Watt (Lindsey, Hadleigh, Suffolk) writes: May one protest against the use of such jargon as that of the title of the paper in the *British Medical Journal* of August 3rd—"Nutritional Iron-deficiency Anaemia." If it means anything, this title would seem to mean "Anaemia, accompanied, or caused by deficiency of iron, having a nutritional value." I think one may quite properly remark that the authors would have done better by sticking to English, and entitled their essay, "Anaemia due to Deficiency of Iron in the Diet."

"Punch" Among the Doctors

Original drawings illustrating medical humour, chiefly arising out of situations between doctor and patient, which have appeared in the pages of *Punch* during the past eighty-five years or so, are to be shown in the Pump Room at Bath for four weeks, opening on August 10th. The collection was first made for the Centenary Meeting of the British Medical Association, but many members of the profession may not have seen the drawings, and others will be glad to renew their acquaintance. Bath, which in its long history as a therapeutic centre has itself not been without its medical humour, seems to be a particularly appropriate place for such an exhibition.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 36, 37, 38, 39, 42, and 43 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 40 and 41.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *100*.